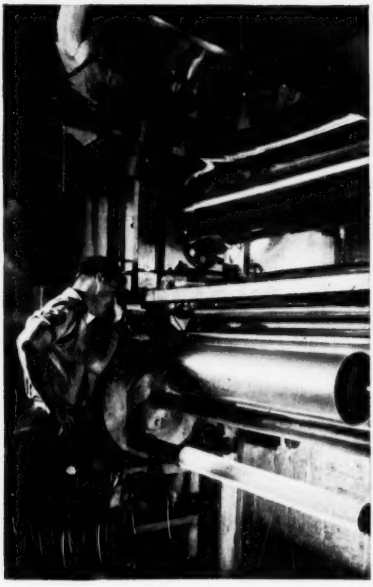
Chemical Week

July 14, 1951 Price 35 cents



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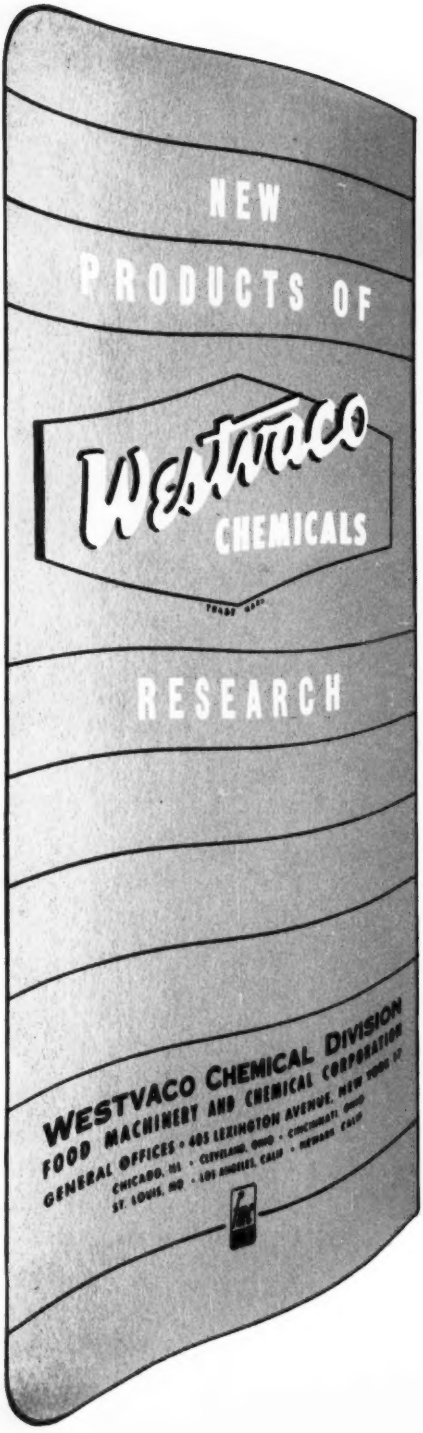
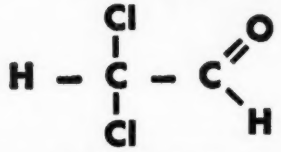
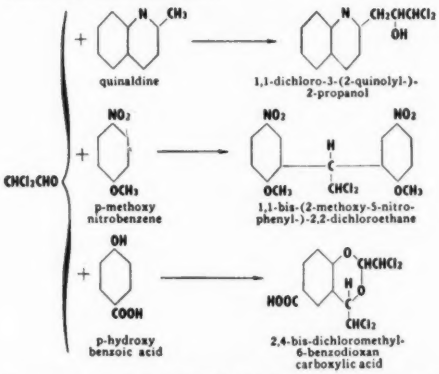


A Versatile New Intermediate

Dichloroacetaldehyde



This highly reactive aldehyde with bifunctional characteristics makes possible many new approaches to old synthesis problems and opens many new areas for exploration. Pharmaceuticals, agricultural chemicals, dyestuffs, plastics and other organic chemicals should provide fertile fields for evaluation.
Three typical reactions are:



Properties: Colorless liquid which slowly and reversibly polymerizes to a white solid. Miscible in all proportions with water, alcohol, ether and carbon tetrachloride.

Boiling Point at 760 mm	88°C.
Freezing Point (approx.)	-50°C.
Specific Gravity at 25/4°C.	1.436
Pounds per gallon	12

Typical Analysis:

Dichloroacetaldehyde	90%

Availability: Samples are immediately available for evaluation. Larger quantities can be made available on relatively short notice.

See Technical Data Sheet S-7 for further details.

Our technical staff will be glad to advise on and discuss your particular application for Dichloroacetaldehyde. Requests on your company letterhead for Data Sheet No. S-7 and for samples will receive prompt attention. Please address Market Development Division, WESTVACO CHEMICAL DIVISION, FOOD MACHINERY AND CHEMICAL CORPORATION, 405 Lexington Avenue, New York 17, New York.

Chemical Week

Volume 69 Number 2
July 14, 1951

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OPINION . . . . .

Resorcinol Pioneer

To The Editor: It was particularly interesting to read your article (June 16) on resorcinol and resorcinol adhesives. For the historical record I feel you should note that the bulk of the credit for the present commercial utilization of resorcinol in the resin field should go to C. F. Hosford, Jr. who was president of Pennsylvania Coal Products. . . . He retained Arthur J. Norton in 1940 for the purpose of developing resin outlets for resorcinol . . . through his foresight the program was continually supported during a period in which practically every resin manufacturer felt that both physical control of the reaction and the economics of the finished product were impractical.

The first large scale commercial use for resorcinol resins was in fuel cell adhesives in 1942 . . . this was followed, in 1943, by the introduction of the "Penacolite" series of low temperature setting adhesives.

Even after the successful introduction of the "Penacolite" adhesives, it was some time before the other resin manufacturers offered competitive products. . . .

Adhesive consumers, and the woodworking industry in particular, owe a substantial debt of gratitude to Mr. Hosford for his stubborn support of the development of these materials.

Philip H. Rhodes
Technical Director
Clopay Corporation
Cincinnati, Ohio

CW appreciates Reader Rhodes' interesting and informative comments, passes them on as additional background to our story on the fast-growing resorcinol business (1952 goal: 8,000,000 lbs.)—Ed.

Uncrossed Fingers

To The Editor: I suppose that the only method you have of knowing whether or not your publication "gets across" to the individual reader is to have the individual reader write to you. Therefore, this letter.

I think now I can safely uncross my fingers, which have been crossed since you changed from a monthly to a weekly. I was afraid that the weekly was going to be the monthly diluted enough to stretch it over the weekly issues. However, I am happy to find out that this is not so. . . .

Actually, it is little short of amazing to me how you can keep so abreast of current things as you do in the weekly issues now coming out.

Loren B. Grimsley
Manager, Technical Survey
Simonize Company
Chicago, Ill.

CW's harried editors (and scurrying correspondents) blush—but happily—appreciate Reader Grimsley's gracious comments. Of interest to the statistically-minded: Far from "diluting or stretching" its content, CW has delivered some 43% more editorial pages this year than last.—Ed.

More Research for Less?

To The Editor: . . . As a chemist (Ph.D.), I have read with very great interest your two articles about "a crippling shortage of technical manpower" (Mar. 31, Apr. 21) . . . and an article along the same theme in *Chemical Engineering* (Apr. 1951) . . . I should like to submit an opinion . . . a suggestion. . . .

Here in Western Europe are a great number of qualified scientists who for different economic and other reasons are out of work. These scientific workers could be of real value to American research. . . .

But there is a hindrance . . . the immigration laws . . . preventing the entrance of foreigners into the U. S. However, a way does exist to surmount this obstacle, capitalize on this technical talent: Let these men work here in Europe under the guidance of American research directors on problems assigned by them.

It would be practical, for instance, to carry through general preliminary research on a specific problem here . . . to narrow down and limit the courses of action which appear to hold the most promise . . . to carry through the final steps in the U. S. A.

Such a program might entail, of course, some additional U. S. investment in scientific equipment, pilot plants, etc. . . .

As you may know, carrying out research is far cheaper in Europe . . . not only in terms of overhead costs but also with respect to salaries and wages. (French wages are at the most one half those in the U. S. . . . that means, naturally, double the research work out of a given budget.)

It is obvious that a judicious selection must be made of all applicants for scientific posts. . . .

The plan I have outlined would seem to be logical to my mind. Your

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- *acetylations*

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Physical Properties

Molecular Weight	100.11
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Boiling Point at 760 mm.Hg	97.5°C.
Vapor Pressure at 20°C.	30 mm.
Freezing Point	—92.9°C.
Flash Point (Cleveland open cup)	60°F.

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OPINION . . . . . .

country has devoted a lot of attention to assembling stockpiles of many raw materials . . . seems to have neglected to assemble a reserve of scientific workers. . . .

Such a technical force is desirable in peacetime . . . of urgent consequence in wartime. . . .

H. BERLITZER
Levallois, Seine,
France

Decades, Not Years

TO THE EDITOR: I have just read your article "Alkali Price Change Ahead" (June 30). . . . Obviously this presentation is of substantial interest to us.

We have used the data which are the basis of the charts which you print in the making of somewhat the same type of predictions regarding tendencies in alkali consumption and demand which you have made. We have been inclined to feel that it was permissible to distinguish, as regards the slope of production curves, between what is essentially a "peacetime period" and a "war-time period."

The quite sharp differences in slope of the curve between these periods is of course obvious if you inspect your charts . . . examining the 1914 to 1919 points and the 1939 to 1945 points.

It is our conviction, based on tendencies which have appeared in alkali markets of late, that growth of alkali production consumption during the present "defense period" is at a rate substantially higher than the average rate.

Over-all, we believe that your presentation is a thoroughly sound one. It may be argued that what we have suggested is simply an added refinement. This is certainly the case if you are looking at alkali economics in terms of decades instead of years.

However, if you are looking at a two or three-year period, the tendency which we suggest needs to enter your calculations. . . .

M. Y. SEATON
Executive Vice President
Westvaco Chemical Division
Food Machinery and Chemical Corp.
New York, N. Y.

A point, and a good one. Our thanks to Reader Seaton for his penetrating observations.—ED.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.
Address all correspondence to: The Editor, Chemical Week, 330 W. 42nd St., New York 18, N. Y.

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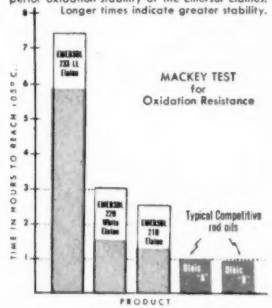
The results of the Mackey Test . . . a convenient means of measuring the auto-oxidation tendencies of oleic acid . . . offer graphic proof of the superior oxidation stability of the Emersol Elaines. Longer times indicate greater stability.



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NEWSLETTER

The food and chemical industries are in high dudgeon this week over articles appearing in July issues of three general magazines: The American Magazine, Consumer Reports and Pageant.

Congressman Delaney himself (see p. 11) is author of the American Magazine piece, refers to "irresponsible manufacturers" in a context that doesn't exclude anyone. Tenor of all of them is inflammatory, damns industry with unproved allegations and unwarranted conclusions.

The Delaney Committee may go farther afield, investigate cosmetics as well. Committee Counsel Kleinfeld told CHEMICAL WEEK that several witnesses have questioned the adequacy of the law's section on cosmetics; it doesn't even require a statement of contents on the package.

One reason for the discrepancy: When the law was framed no one foresaw the rise of such "cosmetics" as hormone creams, ingredients of which may be absorbed through the skin.

Another law got some publicity when Jefferson Lake Sulphur Co. filed suit in the Federal District Court at New Orleans to recover over $39,000 from its president, Eugene H. Walet, Jr. This is the amount of profit, claims the company, Walet made during the past two years by transactions in the company's stock. A Securities and Exchange Commission act says that such profits made by officers belong to the company.

Walet doesn't deny liability to the company, but claims that the amount of money cited is in error.

Power and protection are two worries high on Washington's list:

Two industrial areas—the Pacific Northwest and the Southeast—have already outgrown their electric power supplies, and a third area, the Mississippi Valley, is now corrugating planners' foreheads.

Mobilizer Charles E. Wilson is viewing with alarm, but his own DPA is partly to blame in that it aborted 700,000 KW of potential power by trimming electrical equipment manufacturers' requests for material by an average 25% for the third quarter. Heavy equipment takes a long time abuilding, and the third-quarter cut will have its hardest impact late next year—at the very time Wilson says the power supply will be tightest.

In another sphere, the National Security Council's Interdepartmental Committee on Internal Security has set up a new board to "needle" other Government boards and agencies into more effective measures against sabotage and espionage in industrial plants.

It would take pages to explain which boards do what, but the gist of it is that the Government is keeping a close watch on key plants, and appropriate agencies are working out specific security measures with owners of the plants.

Final action by the Alberta Government clears the way for export of gas from the province to Anaconda Copper Mining Co. in Montana (CIW, April 28). The permit reduces maximum volume for a five-year period from the original 50 billion to 43.8 billion cubic feet.

Issuance of the permit clears the way for the Federal Board of Transport Commissioners to deal with an application for construction of a pipeline from Southeastern Alberta to Montana.

Wool-growers, living high off the hog during a period of dizzyingly high wool prices, are beginning to feel the sting of competition from synthetics. Sharpest thorn in their side is Economic Stabilizer Eric Johnston's avowed intention to force wool prices down by encouraging more synthetic capacity. Methods: rapid write-off allowances, use of wool-synthetic blends in military fabrics.

You can expect to see the battle fought—in part, at least—on political grounds. Congressmen from western wool-growing states are likely to ape the tactics of their dairy-state colleagues during the butter-margarine controversy. But pressure to cut costs on military procurement augurs for substantial Government encouragement of the new fibers.

There are as many assessments of future sulfur supply as there are assessors. CHEMICAL WEEK last month (CW, June 30) scotched predictions of a long-term world shortage, foresaw enough sulfur—at a price—by late next year. Now Defense Mobilizer Charles E. Wilson, more optimistic on industrial growth and perhaps less sanguine as to other nations' ability to meet their own needs, claims that export requirements will create a domestic deficit as far ahead as 1953.

Needs two years hence will total 7.22 million tons, he says, while prospective supply from present sources will furnish only 5.99 million tons. Expansion projects already under consideration will meet 70% of a 1953 expansion goal of a million tons. That will still leave a deficit, but the joker is an export schedule of 1.45 million tons out of the 7.22 million. Domestic needs will thus be only 5.77 million tons.

Du Pont's sulfuric acid works at Niles, Ohio, incidentally, is a casualty to both obsolescence and the sulfur shortage. The 35-year-old plant, built by Grasselli Chemical Co., is being dismantled.

Is the Navy pulling somebody's leg? Titanium experts are skeptical about its claims of being able to cut the cost from $5 to $1 a pound.

The new process is definitely not a modification of the Kroll process (reduction of titanium tetrachloride with magnesium). And since four pounds of the tetrachloride (now selling at 44½¢ a pound) are required per pound of metal, it isn't likely that the process involves that intermediate. Even at a substantial reduction it couldn't make $1 titanium.

Electrolytic or thermal reduction are possibilities, but a lot of smart money is still backing the Kroll process.

Technological developments have made business news this week:

Armour & Co. has signed a contract with Oil Recovery Chemicals, Austin, Texas, which will employ Armour's fatty amides and quaternary derivatives to recover crude oil from spent wells.

A new firm in Schenectady, N.Y., will use a French process to make electrical insulation from domestic scrap mica. The process uses chemical and heat treatment to reduce raw mica to a pulp, which is then made into sheets by adaptation of papermaking techniques. Principals of Mica Insulator Co. have formed the new company, Samica Corp.

The chemical industry bucked a trend during the first quarter: While manufacturing corporations generally showed a profit decline after taxes of 8% from the preceding quarter, chemical profits rose 3%.

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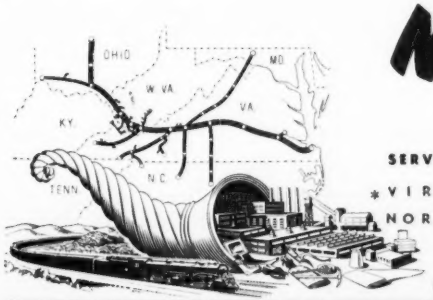

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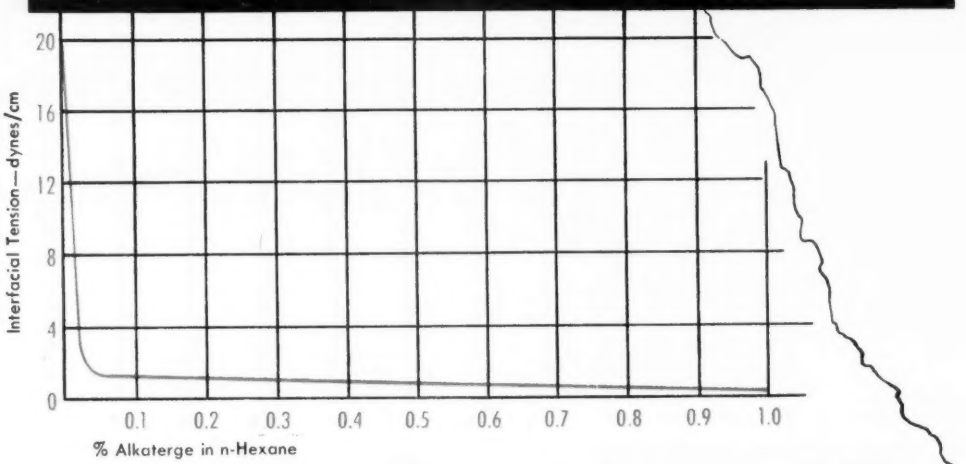

Just 1/25 of 1% of Alkaterge-C—that's all it takes to reduce the interfacial tension between n-hexane and water to one dyne per centimeter. In mineral oil, 0.1% reduces the interfacial tension to approximately one to two dynes per centimeter. That's why Alkaterge-C is such a successful oil-soluble wetting and auxiliary emulsifying agent. It's a sort of chemical lever—makes it easy for the emulsifying agent to do its job. This striking effect on interfacial tension suggests many applications in connection with lubrication, extraction, and impregnating operations.

This non-volatile, amine-type compound reacts with acids to form salts and soaps which are themselves emulsifying and wetting agents. Salts of the mineral and lower aliphatic acids are water-soluble. With the higher fatty acids, Alkaterge-C forms oil-soluble soaps. These salts and soaps have been used as wetting agents and penetrants in metal cleaners and in the processing and impregnating of textile and paper products.

Alkaterge-C also has many uses based on its acid-accepting and surface-active properties. It is an effective anti-foam agent, especially when used in conjunction with mineral oil, and it is also an excellent pigment-grinding assistant in mineral oil vehicles.

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PROPERTIES (of commercial-grade material)

Molecular and Equivalent Weights	350, approx.
Coefficient of Cubical Expansion (20° to 30°C)	0.0008 per 1°C 0.0004 per 1°F
Distillation Range at 3 mm of Mercury	194°C to 310°C
Solidification Point	—36°C, approx.
Surface Tension of Saturated Aqueous Solution:	Less than 40 dynes/cm
Interfacial Tension against Water of a 0.1% Solution in Mineral Oil	1 to 2 dynes cm
Flash Point, Cleveland Open Cup	430°F
Solubility	
in Water	Less than 0.002% by weight
in Mineral and Vegetable Oils	Miscible
in Organic Solvents	Miscible with naphtha, benzene, kerosene, carbon tetrachloride, ethyl acetate, acetone, methanol, butanol, and most other organic solvents.

SPECIFICATIONS (tentative)

Oxazoline Content	70% by weight, minimum
Specific Gravity, 25°/25°C	0.925—0.931
Nitrogen (Kjeldahl)	3.80—4.10% by weight
Color, Gardner Scale	15 maximum
Appearance	Clear, free from suspended matter

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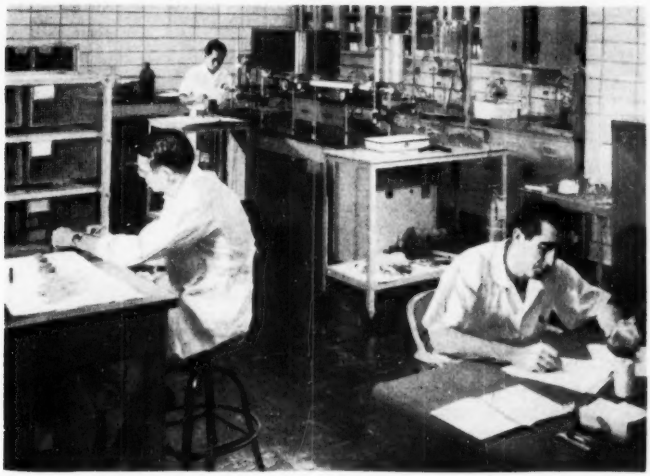


FOOD RESEARCH: Potential prey to overweening zeal.

Coming: Tougher Food Law

Chemical manufacturers can soon expect rougher going in the food additives and pesticide fields.

The Delaney Committee last week wound up its Washington hearings, plans a Kefauver-like junket after the summer recess to dramatize food chemicals' alleged dangers.

Many Committee members and bureaucrats have already made up their minds, are seeking sanction for stifling restrictions.

It was a foregone conclusion last week, as the Delaney Committee (House Select Committee to Investigate the Use of Chemicals in Food Products) wound up its current hearings, that some kind of legislation governing chemicals in food is inevitable.

Chances are it will take the form of a "new chemicals" section added to the Pure Food and Drug Act similar in scope to the "new drugs" section of the present law. This would mean chiefly prior approval of any chemical used in food or beverages.

It's a long road to final enactment: passage of House and Senate bills, ironing out differences in committee, passage of the final version, and signing into law. It may take years,* but there's little doubt that chemical manufacturers will have to learn to live with new restrictions.

Meanwhile, the Delaney Committee is making sure as it can of the final outcome. Representative Delaney himself, in a signed article in this month's *American Magazine*, paints the horrors of phosphoric acid in soft drinks, DDT in meat, chlordane on fruits and vegetables, and synthetic emulsifiers in bread. "The above," he writes, "are only a few examples of groups of food in which new chemicals, introduced by irresponsible manufacturers, are playing an unknown role."

The Committee's keen, able chief counsel, Vincent A. Kleinfeld, was gentle with witnesses who supported the members' preconceived need for legislation, tough as a D. A. in his cross-questioning of those who thought that existing safeguards, with reasonable modifications, are adequate.

The Problem: Nub of the problem facing investigators and legislators is the fact that no one really knows how hazardous various chemicals are. It's easy enough to determine whether a few milligrams of a new compound will kill a rat in three days, but it's another matter to evaluate subtle effects that smaller amounts of the same compound may have when they are consumed day after day during a man's lifetime.

Louis Bromfield, novelist and gentleman farmer, testified that virus X, the mysterious, influenza-like epidemic disease, may be nothing more than manifestations of DDT poisoning; and the increased incidence of heart disease, cancer and leukemia may result from cumulative poisoning by pesticide residues.

Dr. L. E. Harris, chairman of the Institute of Nutrition and professor of animal husbandry at Utah State Agricultural College, on the other hand, reported that he found no pathological changes in rats that carried as much as 144 parts per million of DDT in their bodies.

Neither—and these are but two random examples of the testimony submitted to the hearings—disproves the other, and it is on such a tenuous foundation that legislation is to be pyramided.

It's not a black-and-white question of whether a chemical is safe. The rub is to determine within what limits it is safe. The FDA itself is witness to how difficult that is: It's had authority since 1938 to establish legal tolerances for pesticide residues on foodstuffs, and in the intervening thirteen years no final action has been taken on a single chemical.

The Solution: Since the problem is so complex and, in many cases, so little understood, many in the chemical industry feel that legislation isn't the answer—particularly if the legislation has the unintended but nevertheless inherent effect of stifling research progress.

Yet that is just the effect, thinks industry, that would come about from legislation like the Miller bill (Rep. Miller is a member of the Delaney Committee). This bill would require chemical manufacturers to submit complete data on a proposed food additive to FDA, whose toxicologists would have to give the green light before it could be used. FDA would

* Previous amendment of the food and drug law took five years.

thus be judge, jury and policeman—which is, claim many, too much authority to vest in a single administrative bureau.

Also, since the onus of responsibility is thereby transferred from the manufacturer to FDA, it would be easier for a camel to pass through a needle's eye than for a chemical to pass muster as a food additive. Pointed out Witness Willard Machle, National Research Council: "We would be less than realistic were we to fail to recognize the vulnerability of the civil servant . . . and not to consider the weight that this may have when the occassion calls for decision to act or to do nothing." The let's-play-it-safe attitude, natural enough under such circumstances, would effectively discourage further research of food chemicals.

Industry OK's Notification: Nevertheless, a substantial segment of the food and chemical industries feels that there should be some check on the addition of chemicals to food. Although many chemical companies consult with FDA before using a new compound, the law does not require them to do so. This appears to many to be a loophole in the present law.

The Manufacturing Chemists' Association's suggestion: Let a company notify FDA of its intent to use a new chemical, give FDA all toxicity information it has developed. The company would then, on its own responsibility, introduce the chemical, but FDA would know what's going on, could step in at any time if it—possibly working together with an advisory board—questioned the chemical's safety. Then, if the company and FDA didn't see eye to eye, the matter could, as now, be thrashed out in court. Precertification, asserts MCA, would by-pass the traditional American safeguards of judicial review.

On the Hustings: Whether such an approach will satisfy Congress depends largely on how well the protagonists present their respective cases.

The let's-have-stiff-laws faction is already off to a good start, for their case lends itself to sensational treatment in the popular press. Also, the Delaney Committee will junket across the country next fall. Hearings will be held in New York, and six West Coast cities have been tentatively picked as caravansaries. Object of the trip is to garner testimony from experts, particularly on insecticides, who couldn't conveniently come to Washington.

A further object, of course, is to enlarge the arsenal, already quantitatively impressive, to defend legislative proposals when they reach the floor of Congress. Although Delaney was given funds for continuance of hearings by this year's Congress to "give industry a chance to present its case," the fact is that most experts invited to testify came from governmental agencies and similar-minded organizations.

Snarls Foreseen: FDA admits that a "new chemicals" section, which would involve precertification of all chemicals destined for foods—and possibly for each separate food application—would be difficult to administer. It means extended testing—especially if FDA meant what it said when it excluded synthetic emulsifiers from bread standards on the grounds that they hadn't been proved safe over a lifetime of use. In the meantime, the chemical would be barred unless some kind of "'grandfather clause" gathers in presently used chemicals.

Notwithstanding this admission by the agency that would have to do the job, the danger is that Congress may be influenced by zealots to saddle industry with crushing restrictions and thus fail of its primary objective, viz., to assure the public of a safe, constantly improving food supply. More than one firm in the fields of pesticides and food additives is considering withdrawal, since further development is becoming a barren pasture for investment and initiative.

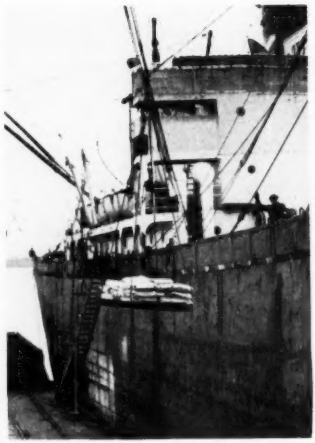
Some time may elapse before legislative action is taken, and in the interim industry will be on the defensive. It will watch, wait, tell its story, and dig in for whatever lies in store.

Marine Parking

Ammonium nitrate laden ships now have a legal parking and fueling area in Honolulu harbor. As a result, the fertilizer business in the Hawaiian Islands may take a sharp spurt upward.

About a year ago, port authorities in Honolulu banned the entry of ships carrying ammonium nitrate. Reason: a general touchiness that grew out of catastrophic explosions in mainland harbors during the unloading of ammonium nitrate fertilizers.

Due to the ban, imports of ammonium nitrate into Hawaii, which



NITRATE FOR EXPORT: Honolulu revisited.

reached more than 10,000 tons in 1949 and 1950, dwindled to almost nothing this year. Fertilizer users had to switch to ammonium sulfate and other type fertilizers. This was particularly tough on ammonium nitrate exporters who lost another big Pacific market for fertilizers around the same time: Korea.

A first relaxation of the ban occurred late last year when cargoes of ammonium nitrate in solution were allowed entry into the Honolulu harbor. Solid ammonium nitrate, however, was still taboo, although five ports on outside islands of the Hawaiian group were ruled as "ammonium nitrate" ports.

But these remote harbors didn't tempt the shippers, and the ammonium nitrate business went into an eclipse. The new "parking area" plan hopes to revive it.

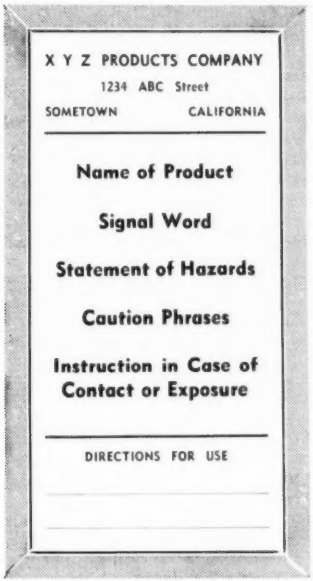
Under the terms of the new plan, anchorage is provided for two vessels, 1,230 yards apart in the bay at a spot approximately 4,800 yards from the Honolulu airport. Fueling and unloading is accomplished by means of lighters.

At last reports, port authority groups in several other harbor cities were studying the Honolulu plan as a possible solution to the problem of delivering dangerous chemical materials in highly congested shipping areas.

Current List of DPA-Certified Chemical Facilities

COMPANY	LOCATION	PRODUCT	AMOUNT ELIGIBLE	PERCENT
Dow Chemical Co.	Freeport, Tex.	Power facilities	$11,500,000	50
Sid Richardson Carbon Co.	Fort Worth, Tex.	Carbon black	2,000,661	60
Mississippi Lime Co.	Ste. Genevieve, Mo.	Chemical lime	1,252,290	75
American Smelting & Refining Co.	New York, N. Y.	Sulfuric Acid	2,716,000	80

Label Law Bandwagon



LABEL LAYOUT: Spells out danger.

More and more, states are noticing possible hazards from chemicals. Industrial expansion and a shortage of workers acquainted with chemical hazards seem to have accelerated this trend.

Latest state to add chemical regulations to its safety laws is California, though in this case, those manufacturers, packagers and users whose labels follow MCA labeling recommendations probably will have no trouble.

The chemical industry regulations are included as sections 4203 and 4204 of the California *General Industrial Safety Orders*. They list the material a label should include, classify hazards in six general divisions and suggest labels for 104 single compounds and five groups of compounds.

While the listing in the MCA labeling manual (*manual L-1, 2nd rev., 1949*) gives 10 classifications of hazardous chemicals, the California law specifies six: poisonous; extremely flammable; flammable; giving rise to hazardous dusts, fumes or vapors; corrosive or absorbed by skin; and irritant. Labels of mixtures should list all dissimilar hazards.

Label Contents: For minimum compliance with the law, each label must give the chemical name of each hazardous component substance, a signal word such as "Danger," "Warning" or "Caution," depending on the severity of the hazard, statement of the hazard (the six classifications above), a caution phrase or phrases and instructions on what to do in case of contact or exposure.

The rules give recommendations as to layout and use of colors to make labelling more effective, and suggest that distinctively shaped containers be used for hazardous items.

Poison Listings: Twenty-five of the 109 listings of the California list are classed as poisons and require a printed skull-and-crossbones on the label in addition to the chemical name. All but six of these have the Jolly Roger emblem in their listing in the sample label section of the MCA handbook. In addition to these, California requires the skull-and-crossbones on acrolein, allyl alcohol, allyl chloride, benzene, oxalic acid and xylidine.

Of course, while following MCA recommendations will help, manufacturers, processors and users having any question about specific compounds should get a copy of the 77¢ booklet covering the California law from the Printing Division, Documents Section, 11th and O streets, Sacramento.

Square Pegs in Square Holes

As large-scale employment of skilled plant workers continues this week unabated, the chemical industry among others is taking advantage of the U.S. Employment Service's ability to place the "right men in the right jobs."

By the use of scientific testing methods, the USES and other affiliated state employment services are placing employees in occupations within the chemical industry for which they are best suited. The service is free to employers, and USES officials stress the fact that many firms do not know about the services it offers.

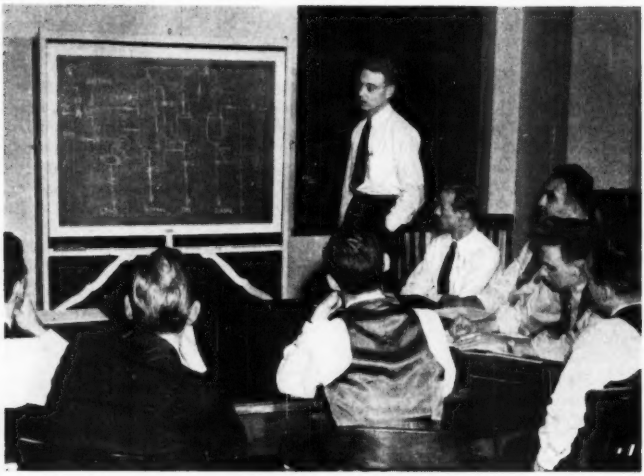
Test Batteries: Over a period of several years, the USES in cooperation with several large agencies and many nationally recognized psychologists has developed over 200 test "batteries" for specific occupations.

The principal and basic test used is known as the GATB test—General Aptitude Test Battery. This is a combination of 15 tests which measure a number of important aptitudes.

Many offices of the USES are equipped to test the applicants for future referral to employers. Test batteries for specific occupations are released to employers for their own use too.

Most experts are agreed that the chemical industry above all others cannot afford the error of a bad matching of an individual's talent with his job; it's much too risky a practice from a safety standpoint alone. Much safer is the scientific method of picking the production workers as carefully as the raw materials which they will handle.

U.S.E.S. TEST: Natural-born valve turners should turn valves.



ENGINEERS: An irreplaceable raw material for chemical production.

Congress: "Engineers Aren't Different"

The Engineering Manpower Commission of the Engineers' Joint Council is somewhat peeved this week. Reason: Its recommendations were almost completely ignored in the new universal military training and service law signed by President Truman on June 19.

As a result of the failure to consider their recommendations, most of the members of the Commission felt that a lot of time and effort on their part had gone for naught. But more important is the fact that much real wisdom on the efficient use of technical manpower has been brushed off needlessly.

Five Societies: The Commission was established last September to prepare a program for the "most effective utilization of engineers" in the national defense effort. The council itself consists of five engineering societies—American Society of Civil Engineers, American Institute of Mining and Metallurgical Engineers, American Society of Mechanical Engineers, American Institute of Electrical Engineers and the American Institute of Chemical Engineers.

It can't be said that the commission representing these technical groups didn't do its utmost to enlighten the legislators. When the bill was being ironed out in conference committee in May, the commission bombarded congressmen to change the bill so that young men deferred for occupational reasons would not be "penalized" by extension of their liability from age 26 to 35. If this couldn't be done, the commission contended that at least the bill should be altered to provide an extension of liability for a period equal to the amount of their deferments. But congress just couldn't see it.

700,000 Lost: Because of this congressional myopia, Carey H. Brown, chairman of the commission sees a potential loss of an additional 700,000 men under the provisions of the new law. Brown's words may well plow furrows in the brows of chemical personnel men, for Brown knows the needs of the chemical industry. He is manager of Engineering and Manufacturing Services at Eastman Kodak Co.'s Kodak Park Works at Rochester, N.Y.

Other commission suggestions ignored by the hurry-up-and-pass-it congressmen included that to set up one or more civilian reserve deferment appeal boards. The compromise bill did not contain such a provision. But the commission, undaunted by this setback, is still plugging for a top-level board composed of "technically qualified" civilian and military people to set policy and administer the recall of reservists to active duty. This would guarantee that essential defense industry as well as the military forces would get "full consideration."

No Chance: But there is little chance that such a board will be created. The armed forces are not for it, claiming that their experience with composite boards has shown them to obstruct more than help. They add that military needs should not be subjugated to the interests of any special group. Their feeling is that there is too much deferment and too many exceptions.

Even the public seems to feel this way on the subject of deferment. The draftee or reservist who is called up during this period of "undisremobilization" is looked upon as an unlucky guy who couldn't find a loophole.

Delays Sought: In the meantime, chemical employers continue the fight to hold their men. Even delays in call-up are now considered a blessing.

In the case of an Army reservist application for delay must be submitted on form 591, which is available from the office of the chief of the military district in the state. In the case of a Navy reservist, application for delay should be made to the Chief of Naval Personnel, Washington, D.C., via the commandant of the naval district in which the employee resides. Requests for delay of Air Force reservists should be made to the commanding general of the unit concerned. Army form 591 can be used for Navy and Air Force reservists too. Service unification has its points.

Price Control Ease

Although Congress is still debating the whole issue, the Office of Price Stabilization continues its orders and amendments relating to price rollbacks. But no matter what the final decision of Congress may be, the chemical industry can find encouragement in Supplementary Regulation 7 to CPR 22.

SR-7 singles out the chemical industry for special attention. It provides three alternative provisions for refiguring the base period price.

The first provision allows chemical companies to add increased costs of repair and maintenance material to the base period price. This was necessary, explains OPS, because of the disparity between the increase in these costs in the chemical industry and in other manufacturing industries.

For industry as a whole, maintenance costs have risen by about 12%. But for the chemical industry—because of corrosive processes and the frequent use of high temperature and pressure—the figure is much higher.

The second provision is aimed at sulfur users. The wording of the regulation is somewhat confusing, and the exact meaning is not clear without an official interpretation.

Sulfur producers, however, state that their interpretation is that under CPR 22, unamended, some consumers would have been paying $22 per ton for sulfur but would be forced to compute their base period price on the basis of $18 a ton. Under SR 7, they will be able to use the $22 figure for calculating costs.

The final provision applies to joint products and by-products of a single chemical process. CPR 22 provided that, in some cases, uniform increases over base period prices are computed for such products because the manufacturer is unable to compute unit manufacturing costs separately for each product, even though a uniform increase over base period prices would not be appropriate.

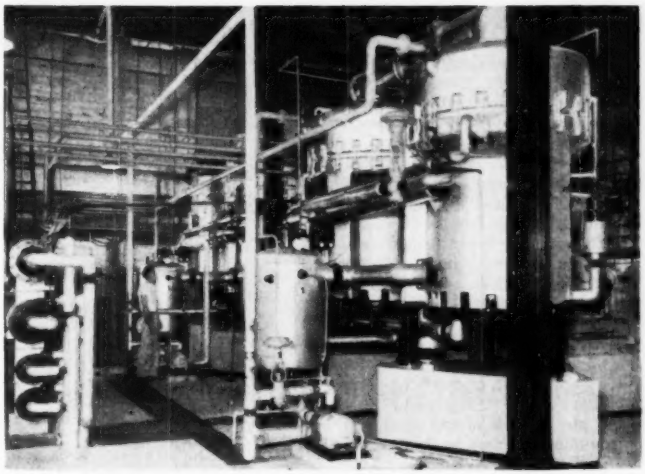
Under the new supplementary regulation, the manufacturer may apply a higher percentage increase on one product or by-product than on another. But the aggregate dollar increase in costs for any given unit of production may not exceed the aggregate dollar increase which would result if CPR were applied to each chemical separately. Furthermore, the manufacturer is not permitted to apply to any one product a percentage greater than twice the amount otherwise allocable to the product.

Saltless Seawater

A proposal to spend $25 million for sea water-desalting is now before the House of Representatives' Interior Sub-Committee. First reactions are favorable, but current distillation processes are too expensive: Cost of the cheapest would have to be cut by more than two-thirds for practical industrial use.

William E. Warne, Assistant Secretary of the Interior, told the committee that research may make now-impractical salt water-sweetening methods usable. A development of this kind would indeed be welcome; many of the nation's large cities and much of the Pacific Southwest are on the brink of serious water shortages. Moreover, industrial water problems are increasing every year, and water availability is often a prime consideration in locating new chemical plants.

It's the quality, not the quantity of industrial processing water that's bothering chemical plant managers. Industry was recently reassured by the U.S. Geological Survey that the quantity of available water is generally adequate over the entire country. But, the water is getting dirtier, harder to clean up.



WATER STILL: Can the sea answer industry's water demands?

Pollution is usually worst at river mouths, making pre-treatment operations expensive. If research on large-scale distillation of sea water is successful, it may pay to build a coastal plant and use distilled sea water for processing. Industrial men are giving a lot of attention to these investigations—not only from the sea water angle, but also with an eye toward purification processes on inland rivers.

Secretary of the Interior Oscar L. Chapman urged a stepped-up program of research in Congressional testimony given last March. Warning that water problems were growing more acute for many industrial areas in the West, Chapman said that development of economical methods for wholesale purification of ocean waters would open new frontiers.

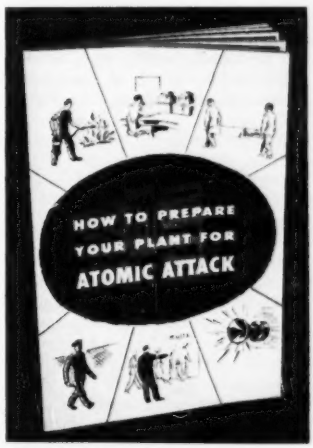
Purified sea water could be made available for coastal areas, including cities, and would help inland areas by releasing fresh water streams now diverted to the coast. Fresh water now required for urban areas on the California coast, for example, might be used to irrigate additional lands in the San Joaquin Valley and other regions.

Chemical Crutch: Cost-cutting is the major hurdle in the path of practical salt water conversion. One possibility for reducing expense is the recovery of valuable by-product chemicals. Ocean-derived products such as chlorine, magnesium, bromine, hydrochloric acid, etc. are in short supply, would have a waiting market.

But in the final analysis, the burden still rests squarely on the shoulders of the engineer. According to Chapman, the largest vapor compression distillation units have been improved to such an extent that the cost of producing distilled water might be as low as 55¢ to $1.50 per 1,000 gallons. What is needed, he says, are distillation plants with "500 times the capacity and 50 times the efficiency." . . . A tall order, but one that should get plenty of attention in the face of another war.

Bombs and Booklet

A small booklet, entitled "How To Prepare Your Plant for an Atomic Attack," was offered by Walter Kidde & Company this week free for the asking. The booklet is believed to be the first devoted to this subject, intended specifically for industrial man-



PREPAREDNESS: With simple words.

agement and safety personnel and prepared solely at the expense of a private company.

John Kidde, president of the plant construction outfit that bears his name, revealed that the United States Atomic Energy Commission and many civil defense agencies cooperated.

Highly technical language is avoided in the book. Instead, rather simple lay phrasing is used to present estimates of an atomic bomb's effect, the casualty rates to be expected (and how to lower them), and tips on the construction of shelter and building units to yield maximum protection for personnel.

In the interest of rapid dissemination of the material in the book, the Kidde organization waived the usual publisher's right of copyright. As a result, any portion of the opus may be reprinted without prior approval.

Untangling Exports

The unenviable task of clarifying the maze of export regulations enforced by the Commerce Department's Office of International Trade moved slightly closer to completion a few days ago in a meeting of 12 chemical firm representatives who constitute the Chemical Export Advisory Committee with government officials.

Main point emphasized by chemical exporters was that exports of nonstrategic commodities should be controlled only if domestic distribution is also limited.

On strategic commodities, whether they are in short supply or not, committee members told OIT officials they feel that export controls should not necessarily be related to domestic controls. The whole problem, they assert, boils down to the logical point that defense efforts and economic stability of friendly nations must not be undermined by too great restrictions on strategic raw materials (*CIW, April 28*).

Strategic exports to unfriendly countries have been prohibited by the Export Control Act of 1949, originally scheduled to expire last month. Congress, however, extended its life through June of 1953.

The exporters assured OIT officials headed by Louis N. Markwood, new director of the Office's chemical division, that the chemical industry is exercising all possible care to prevent American chemicals from falling into the hands of communists by transshipment from other countries. Approval of OIT's action in stopping U.S. exports to China last December was also voiced.

MARKWOOD: For exporters, clarification.

The approval, however, was not without reservation. Some members complained that shipments unloaded when the stop order went into effect are still stored at U.S. piers because the chemicals are not readily salable in other markets. Expiration date of some pharmaceuticals in the group are now close at hand.

Government officials promised expedited treatment for such shipments to other approved destinations and consignees if—and it's a big if—exporters are able to get orders for them.

Red Tape Cut Asked: The export committee asked that "blanket licensing" be used wherever possible to save paperwork for their already harried clerical staffs. Under this method—now used for carbon black and a few other commodities—exporters shipping the same chemical to two or more consignees in the same country may save paperwork by filling out only a single application for all shipments.

A question of whether chemicals can be considered MRO (maintenance and repair) supplies for either domestic or export purposes brought a flat "no" from OIT. The matter was brought up in discussing priority assistance for MRO supplies to be exported. Such assistance, OIT officials said, could be made available only for replacement parts and accessories for machinery and equipment for foreign chemical plants as under NPA's Direction 2 to Regulation 4.

But because of the nature of chemical industry operations, it was still believed that some chemicals would in themselves still be MRO items for both domestic and export purposes.

The whole MRO procedure is still rather up in the air. The temporary MRO procedure in effect during May and June has been extended through July since a longer-range MRO procedure has not as yet been announced.

FOREIGN . . . . .

England: A plant for extracting sulfur from crude oil will be built at Esso Petroleum's new refinery at Fawley, near Southampton. Scheduled for completion in 1953, the plant will turn out 12,000 tons of 95.5% sulfur a year. Most of the output will be available for other industries. As a conservation measure, the entire refinery has been designed to use a minimum of sulfur in its treating processes.

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India: Reichhold Chemicals, Inc., is planning a production unit in India for large-scale manufacture of synthetic resins. An RCI representative is due in India for discussions. At present the plastics industry is dependent on imported materials.

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Israel: Negotiations are in progress between Du Pont and Israel institutions with an aim toward establishing a large nylon plant in the country, reports the *Jewish Agency Digest*. The magazine also says that Du Pont intends to establish several other plants in Israel.

EXPANSION . . . .

Du Pont: An improvement program at the Yerkes Works in Buffalo will cost approximately $1.9 million. One phase of the program will be to modernize the Cordura high-tenacity viscose rayon yarn plant in order to boost capacity. Other portions of the program are still in the formative stage.

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Tennessee Products and Chem.: Furnace operations at the Alton Park plant will be expanded at a cost of $1.5 million. Present plans call for the installation of two more furnaces.

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Pfizer: Recent recapitalization will net the company about $28 million in new capital. Part of the money will be used to cover the company's present expansion program which involves $13.4 million. The rest of the funds will be used either for additional working capital or for further expansion of production, or for both. At present, the board of directors is considering several propositions for expansion.

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International Min. & Chem.: The company has purchased the Thomson

Phosphate Co. Thomson had been a sales and distributing company for fine ground phosphate rock, International had been its source of raw material.

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Shell Chemical: Another petrochemical unit is now in operation at the Wood River Refinery. The plant is producing dodecyl benzene, output will go to synthetic detergents.

KEY CHANGES . .

Carlton Bates: From director of operations to vice president in charge of the Alkali Section, Solvay Process Division.

H. R. Margetts: From assistant director of operations to director of operations, Alkali Section, Solvay Process Division.

William J. Muller: To export manager, Southern Alkali Corp.

Walter H. Aldridge: From president to chairman of the board, Texas Gulf Sulphur Co.

Fred M. Nelson: From executive vice president, Compania Exploradora Del Istmo (Texas Gulf subsidiary), to president, Texas Gulf Sulphur Co.

Sidney Doree Black: From associate professor of aeronautical engineering, Case Institute of Technology, to supervisor, Experimental Physics Division, Horizons, Inc.

E. H. Dours: To sales manager, Pliofilm Department, Goodyear Tire & Rubber Co.

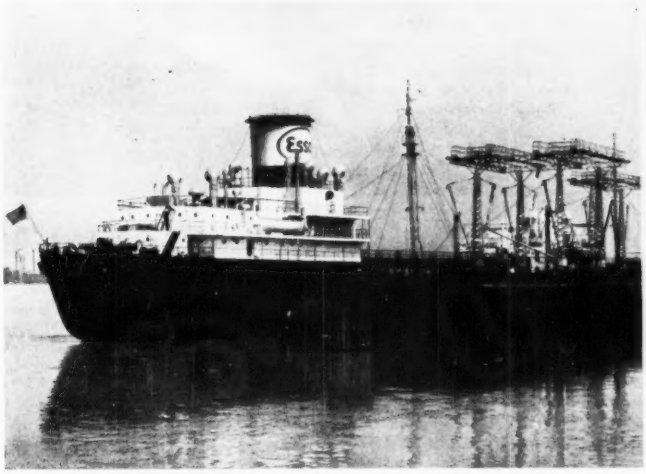
F. A. Koechlein: From assistant to the vice president, Phosphate Division, to general manager, Phosphate Division, International Minerals and Chemicals Corp.

Harry N. Stevens: From director of patents and abstracts to director of colloid and textile research, B. F. Goodrich Co.

Bruce M. Bare: From district manager, Sharples Chemicals, Inc., to sales manager, Organic Chemicals Division, Dewey and Almy Chemical Co.

John E. Goodman: From assistant comptroller to assistant treasurer, Hercules Powder Co.

Edward C. Hastings: From manager, general accounting division, to assistant comptroller, Hercules Powder Co.



OIL FOR EXPORT: Now will take 5% of new drum supply.

More Drums There, Fewer Here

Good news for exporters usually entails bad news for domestic users. In this case, the news—good and bad—comes in the form of NPA's recent container directive. It requires producers of new, 55-gal. drums to set aside 5% of their monthly production during July, August and September—for use by exporters of lubricating oils and petroleum-derived asphalts and greases.

NPA says the action was taken at the behest of the Economic Cooperation Administration, the Department of State, Office of International Trade and other government agencies. The fact was that the exporters were not getting enough drums to make their authorized shipments. The result: backlogged orders, frayed dispositions among the exporters and their foreign customers.

Good News: NPA's order will make 125,000 drums (55-gal., 18-gauge and lighter) available for export shipments for each of the next three months. It will not answer all the needs of the exporters; the quota amounts to about 12.5% of their monthly requirements. But it should go a long way toward alleviating the demands and assuaging our relations with friendly foreign nations.

Exporters who desire priority assistance for obtaining a share of the new drums for shipping to foreign countries other than Canada or countries for which ECA is the claimant agency should submit their requests in triplicate to the Office of International Trade. The requests must contain the names and addresses of all parties to the transaction and a statement explaining the end use and urgency of the need for the products in the countries of destination. In addition, exporters who apply for the help should describe what efforts they have taken to obtain the drums without priority assistance.

If the exporter is shipping the petroleum products to any country for which ECA is the claimant agency, the request should be submitted to ECA through the Washington office of the country of destination. If the shipment is destined for Canada, the request should be submitted through the priorities Division, Department of Defense Production, Ottawa, Canada.

Bad News: In its directive to producers of steel drums, NPA said that every effort would be made to maintain existing customer-supplier relationships. It is hard to see how this can be done.

In any event, NPA's action to reduce the available supply of drums here will not sit well with a drum-hungry American industry. Everyone agrees that friendly foreign nations should get help in producing vital defense products. But drums are a sore spot in our own expanded production. Any move to make more available abroad by cutting the supply here seems like a case of robbing Peter to pay Paul.

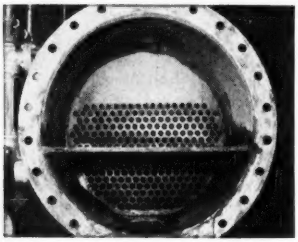
FOR YOUR INFORMATION

Every month Monsanto publishes these pages of pertinent information which may be helpful to you. This issue discusses:

Detergents | **Heat-Transfer Medium**
Slime-Control Chemical | **Special Chemical**
Plasticizers | **Wetting Agents**

Additional information on any of these subjects will be provided by any Monsanto Sales Office in response to your request by coupon or letter.

Santophen 45 controls slime in recirculated cooling water...Here are figures to prove it!



WITH SANTOPHEN 45—This is an unretouched photo of an intercooler condenser, which had not been cleaned since the beginning of the Santophen 45 test in late 1949. The unit contained no slime and practically no corrosion.

These statistics were compiled from observations made on recirculating systems at one of the plants of Monsanto Chemical Company.

During 1948 and 1949, before Santophen* 45 was introduced, the slime problem was acute in a Monsanto 12,000-gallon-capacity air-conditioning cooling tower. To keep the system working efficiently, from three to five mechanical slime cleanouts were needed yearly. These operations cost from $300 to $500 each. Santophen 45 was introduced into the system late in 1949 and has been in continuous use since.

Results of a definite period of observation are as follows: On July 3, 1950, Santophen 45 was added at the rate of 100 parts per million. This required only 10 pounds of Santophen 45 for the 12,000-gallon system. Such applications were made biweekly until later in the fall when they were put on a weekly basis. In all, 350 pounds of Santophen 45 were used at a cost of $119. Throughout the year, the exchangers gave a high level of heat transfer and *did not require a single shutdown for mechanical cleanout.*

Santophen 45 (sodium trichlorophenate, technical) can be used alone or as an extender for hard-to-get slime-control agents such as chlorine, sodium hypochlorite, sodium pentachlorophenate and others. Used in combination with other slime-control chemicals, enhanced action against a wider range of microorganisms is achieved. Santophen 45 is particularly effective in cooling waters acidified to pH 5.5 to 6.5.

For a test sample, technical data and availability information, mail the coupon or contact the nearest Monsanto Sales Office.

THREE BAI-ACCEPTED NONTOXIC PLASTICIZERS

Available to manufacturers of food-packaging materials are three Monsanto Plasticizers which have been accepted as nontoxic by the Bureau of Animal Industry of the U. S. Department of Agriculture.

These are: Santicizer* 141 (octyldiphenyl phosphate), Santicizer B-16 (butyl phthalyl butyl glycolate) and Santicizer No. 15 (ethyl phthalyl ethyl glycolate).

For prices, data and technical aid in formulating nontoxic packaging materials, mail the coupon or contact the nearest Monsanto Sales Office.

Round 'em up . . . send 'em home

If you have empty carboys, returnable drums or tank cars around your plant, please round 'em up and send 'em back to your supplier promptly. Shipping containers are in short supply. Returning containers helps your supplier give better service.

RESEARCH CHEMISTS' CORNER

You may find something new here

Here's another new Monsanto chemical that is now available in semicommercial quantities. Like other new chemicals previously mentioned in this space, Diethyl Succinate is worth considering for its possibilities in developing and improving products. Experimental samples will be furnished on request.

DIETHYL SUCCINATE

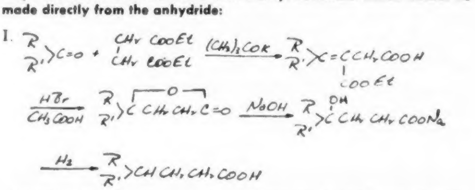
Formula: $CH_2COOC_2H_5$ / $CH_2COOC_2H_5$ — Mol. Wt. 174.2

Approximate Properties:

Acidity (as succinic acid): .01% max.
Appearance and Color: Essentially colorless, clear mobile liquid.
Assay: 99+%.
Boiling Point: 120° C. at 30 mm. Hg.
Crystallizing Point: Approx. — 20°.
Odor: Slight odor.
Refractive Index n_D^{25}: 1.417-8.
Specific Gravity at 25° C./25° C.: 1.037-9.
Solubility: Insoluble in water. Soluble in alcohol and ether.
Wt. per U. S. Gal.: 8.7 lbs. at 25° C.

Preparations that can be made with diethyl succinate which cannot be made directly from the anhydride:

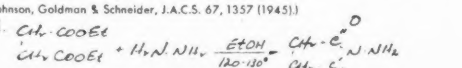
I.



If either "R" or "R[1]" is aromatic, ring closure can be carried out by standard methods.

(Johnson, Goldman & Schneider, J.A.C.S. 67, 1357 (1945).)

II.



(Curtius, J. Prakt. Chem. (2) 92, 102 (1915).)

Ortho-nitrobiphenyl, low-priced plasticizer that's efficient... and available

If costs and availability of plasticizers are headaches in your business, we suggest you investigate Monsanto's ortho-nitrobiphenyl. ONB is efficient as a primary plasticizer or as an extender, and it is immediately available in any quantities you need. It sells for only 14½ cents a pound in truckloads or carlots.

Ortho-nitrobiphenyl (also known as ortho-nitrodiphenyl) is compatible with cellulose esters and ethers, polyvinyl chloride, polyvinyl butyral, polyvinyl acetate, styrene, rosin and rosin esters, modified phenolic resins, oil-soluble alkyd resins and vegetable oils. This wide compatibility, plus its low hydrolysis rate and low price, makes ONB an unusually attractive plasticizer.

Most resins, both natural and synthetic, can be plasticized with ONB. The amount of required plasticizer varies with the resins and the use of the finished product. The volatility of ortho-nitrobiphenyl is less than diethyl phthalate and greater than dibutyl phthalate.

Ortho-nitrobiphenyl is readily soluble in carbon tetrachloride, mineral spirits, pine oil, turpentine, benzene, acetone, glacial acetic acid and perchlorethylene. It is, itself, a good solvent.

For technical information on ONB, contact the nearest Monsanto Sales Office or mail the coupon for a copy of Monsanto Technical Bulletin No. OD-102.

• • • • • • •

Nonflammable heat-transfer medium

For more than eight years, Monsanto AROCLOR * 1248 (chlorinated biphenyl) has proved an ideal nonflammable, liquid-phase heat-transfer medium. AROCLOR 1248 can be used continuously at temperatures up to 300° C., and at pressures of 30 pounds per square inch or less. Mail the coupon for details.

Santomerse No. 1, all-purpose detergent and wetting agent, serves many industries

To name the industries that have use for Monsanto Santomerse* No. 1 would amount to compiling a directory of American manufacturers. Versatility of the product makes it a valuable assistant in many operations.

Santomerse No. 1 is effectively used for cleaning, penetration, dispersion, emulsification and spreading.

Santomerse No. 1, an anionic detergent, has a minimum of 40% active alkyl aryl sulfonate, the remainder being principally inorganic builders. This combination has been found to be best for high efficiency and economy.

Usefulness of Santomerse No. 1 covers a wide range of applications because the product is effective in hard or soft water, in acid or alkaline baths, in hot or cold solutions. Santomerse No. 1 can be used in operations where the pH is critical because it assumes the pH of the solution in which it is used.

There may be many places where Santomerse No. 1 can improve efficiency and help you to turn out better products. Why not investigate these possibilities? Mail the coupon for a copy of Monsanto's booklet "*Santomerse No. 1 . . . All-purpose wetting agent and detergent*," which contains a great deal of technical information which may be useful to you.

A few of the many uses of Santomerse No. 1

Metal Industry

Railroad Car Cleaners

Household Cleaners

Dehairing Hogs

Dairy Cleaners

Agricultural Sprays

These half-dozen uses of Santomerse No. 1 may suggest applications in your business. If you want detailed information on specific uses in your industry, contact the nearest Monsanto Sales Office or write Monsanto Chemical Company.

• • • • • • •

New detergent offers you flexibility in formulating

Monsanto now has available in commercial production a new detergent and wetting agent—Santomerse 80. Santomerse 80 contains the same active ingredient as Santomerse No. 1, but is double strength. It has 80% of active alkyl aryl sulfonate, the remaining 20% being principally inorganic builders.

Santomerse 80 is a synthetic detergent in concentrated form which gives more flexibility in formulating. It is recommended for specialty compounds where low inorganic content is desired. Its high concentration of active alkyl aryl sulfonate permits a reduction in bulking of the finished detergent mixtures, where this characteristic is desirable. In addition, it reduces the requirement for warehouse space and material handling.

Santomerse 80, available in flake form, can be blended easily with phosphates, carbonates and silicates. For complete information, mail the coupon.

MONSANTO CHEMICAL COMPANY, 1700 South Second Street, St. Louis 4, Missouri. District Sales Offices: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto (Canada) Ltd., Montreal.

*Reg. U. S. Pat. Off.

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☐ Santophen 45. ☐ Diethyl Succinate.

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inactivate metallic contaminants by sequestering with Pfizer Gluconic Acid

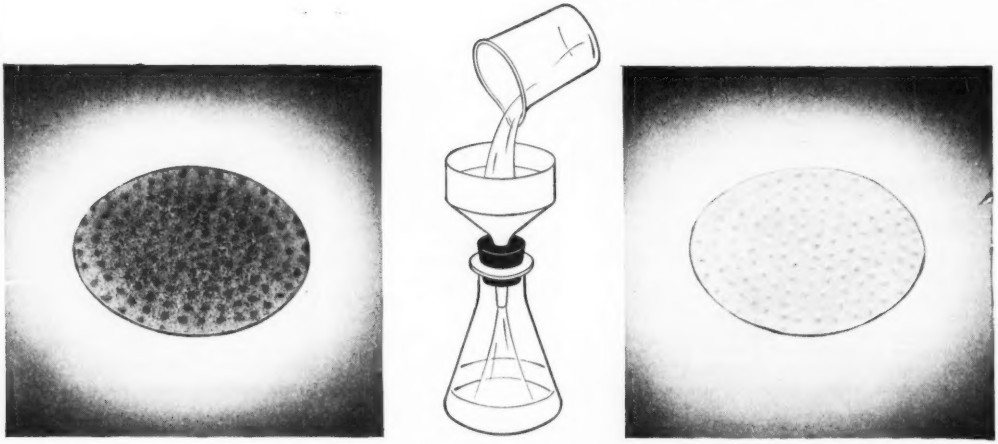
Unwanted traces of iron, aluminum, copper and other metals picked up from pipe lines and processing equipment can be rendered inactive by the use of small amounts of gluconic acid. This non-toxic, non-volatile, non-corrosive acid acts as an effective sequestering agent...makes it all but impossible to detect the metal impurities by common analytical procedures.

Gluconic acid prevents the precipitation of metallic cations at pH values ranging from 4.5 to relatively high caustic solutions. In the case of calcium and magnesium it has been proven particularly effective as a sequestering agent in relatively strong—3%—caustic concentrations.

One of the mildest acids available, gluconic acid is used as a sequestering agent in many processes including textile printing, industrial water treatment and tanning, and in detergent formulations. It is marketed as an amber, 50% aqueous solution possessing a slight acetous odor, and has a specific gravity of 1.24 at 25°C.

Write our Technical Service Department today for complete information, samples and prices.

PFIZER QUALITY ® PFIZER



Without Gluconic Acid

A small amount of gluconic acid was added to one of two beakers containing an iron solution. Both solutions were made alkaline by the addition of caustic soda. In the case of the solution *without* the gluconic acid, a precipitate of ferric hydroxide was formed. The solution *with* the gluconic acid remained clear even though adjusted to the same alkalinity.

With Gluconic Acid

GLUCONIC ACID

AMMONIUM GLUCONATE • CALCIUM GLUCONATE • COPPER GLUCONATE • FERROUS GLUCONATE • MAGNESIUM GLUCONATE
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INFRA-RED SPECTROMETRY: Key to a new look in chemical manufacturing.

New Role For Infra-Red

On-the-spot process control is now within the grasp of infra-red instrumentation techniques.

Rapid quantitative analysis of complex mixtures, one of infra-red's strong points, offers the attractive possibility of . . .

Converting many batch-wise operations to more economical continuous flow processes.

The infra-red spectrometer has proved itself in the research and process control laboratory. But this is just a start. Infra-red experts like Van Zandt Williams of The Perkin-Elmer Corp., Norwalk, Conn., look forward to the day infra-red will be right in the production line. Primarily an analytical tool, it has much to offer in this capacity. The reason is simple: Infra-red offers rapid, reliable answers to the questions: What is it? How much?

When a chemical compound is subjected to infra-red radiation, it usually absorbs a certain amount and transmits the remainder depending upon wave length of radiation used. If per cent absorption (or transmission) is plotted against wave length for the entire infra-red range, a characteristic curve is obtained. This curve, specific as a fingerprint, provides a sure-fire means of identification for previously characterized compounds and a first rate clue to the identity of unknowns.

Absorption values are not only characteristic of the compound as a whole, but often are also characteristic of atomic groupings within the molecule. Thus, a good deal of structural information can be deduced from an inspection of an unknown compound's spectrum. Infra-red data of this kind has played a major role in the characterization of cortisone, penicillin and many others.

In the hands of a competent operator, the infra-red (I.R.) spectrometer is a complete analytical tool. Unlike such singular values as melting point, boiling point, index of refraction, etc., the infra-red spectrum is a combination of physical check points. Matching of an unknown with a known spectrum is immediate proof of identity. This holds true for mixtures as well, where the final spectrum is generally the superposition of the individual component spectra. Moreover, quantitative analysis is readily accomplished by measurement of band intensities at specific wave lengths.

Isomers Are Easy: But infra-red also has less obvious advantages over more conventional analytical techniques. Molecular weight, for example, is of little concern to the I.R. spectrum. Close boiling hydrocarbon isomers—a tough nut for distillation—produce sharp spectral differences. Structure is the determining factor; positional difference in a single methyl group is enough to produce a sharp spectral contrast.

Infra-red in industry finds ready application in three important jobs: quantitative analysis of mixtures; qualitative purity determination; identification and characterization of new or unknown substances. Aside from its inherent suitability to these activities, I.R. spectrometry is endowed with additional operating benefits.

Samples may be solid, liquid, or gaseous. No more than a few milligrams are needed and the material may be recovered intact. Data is recorded rapidly, can be kept in permanent form for future reference. Best of all, every organic compound and most inorganics have characteristic I.R. spectra—the method is almost universally applicable.

The past decade has witnessed an industrial awakening to the potentialities of infra-red. Research uses have led the way, but application in process control didn't lag far behind. Today the infra-red spectrometer is a familiar standby of the modern analytical laboratory. Hooker Electrochemical Co. uses it to determine the gamma isomer content of benzene hexachloride; Merck & Co. has a specific I.R. assay for penicillin G; Du Pont has used the instrument for the determination of small amounts of water in its

VAN WILLIAMS: Obstacles can be overcome.

Freon refrigerants; Humble Oil Co. finds the I.R. spectrometer made-to-order for analysis of petroleum fractions.

Chemical manufacturing processes today are largely batch-wise operations. A given quantity of starting material reacts under controlled temperature, flow, and pressure in a given amount of time to produce a desired product. When conditions are optimum, the yield is maximum. Efficiency of any one operation is determined by analyzing a sample of the final products and comparing the actual yield to the theoretical. If the result isn't up to snuff, the process variables are adjusted prior to running the next batch.

Built-In Control: An I.R. analyzer in the production train could supply a continuous check on the process through all its phases. Product-analysis would be built into the process. In time, it is quite probable that infrared will change the very nature of the manufacturing process. I.R. analyzers, abetted by proper instrumentation, could automatically control a process from start to finish and change it from batch-wise to continuous flow.

But the picture is not entirely rosy. There are limitations to the use of infra-red in the production line—both in apparatus and in personnel. Spectrometer prisms are made of rock salt, subject to attack by water vapor and other atmospheric constituents prevalent in chemical plants. The instruments must operate within close electrical and optical noise limits; large temperature variations are also tabu. A delicate instrument, the spectrometer requires delicate handling. When functioning correctly, any skilled person can operate it; if it goes on the blink, an expert is needed.

Despite these handicaps, Williams feels the job can be done. In fact it has been done; an I.R. analyzer was used for a time in the manufacture of butadiene. Experience has shown that one big obstacle to widespread use of I.R. analyzers in production is the reluctance of plant men to learn their potentialities and give them a fair trial. However, interest in infrared has been growing steadily and additional process-line trials are now being planned.

Hot Atom Road Test

Researchers of the Atlantic Refining Co. are harnessing radioactivity in their quest for better road building materials. Now, a simple, reliable laboratory test forecasts probable extent of asphalt road deterioration due to moisture.

The new procedure gages the effect of water on asphalt coatings, will aid in the development of improved asphalt-toughening additives.

Crushed stone and gravel is ordinarily coated and bound with asphalt in road building. Moisture weakens this coating and often causes it to slough off, leaving an exposed and highly traffic-vulnerable stone surface. Most existing methods for determining this type of disintegration rely on visual estimation of exposed gravel surface after the damage has been done. Beauty of the new technique is its ability to predict road durability on the strength of test materials.

A small amount of beta-emitting calcium chloride is deposited on a sample of gravel prior to coating with asphalt. The sample is then given the water treatment. If the asphalt jacket breaks down, the radioactive calcium chloride under-coat dissolves in the water. Radioactivity of the resulting solution – measured with a Geiger counter—is then a measure of the exposed area, and indirectly, a measure of the durability of the asphalt coat.

This preliminary data, in the hands of the asphalt manufacturer, is the tip-off to the efficiency of his product, should be a boon to the development of superior materials.

•

Paper Coating: Dow Chemical Co. has recently patented (U.S. 2,537,114) a coating composition prepared by mixing an aqueous solution of a copolymer of butadiene and styrene with an aqueous dispersion of an inert mineral pigment containing a size. Presence of latex in the formulation improves the flexibility, gloss, resistance to curl, and printing properties.

•

Borax Tracer: Tracing the flow of underground water is now simplified by the use of borax. The method, covered by a Phillips Petroleum Co. patent (U.S. 2,533,900), will be especially valuable to oil producers revitalizing spent wells with water pressure. Injected water contains borax detected later by spectrographic analysis.

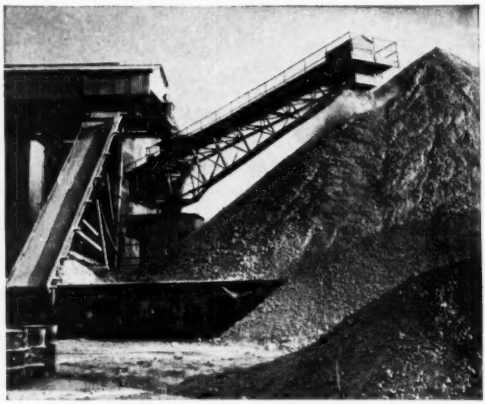
•

New Plasticizer: Hooker Electrochemical Co. is now offering MPS-500—a new low-cost plasticizer for vinyl compounds. Imparts flame retardance and good strength characteristics. May be used alone or in conjunction with other plasticizers.

Life ...on the

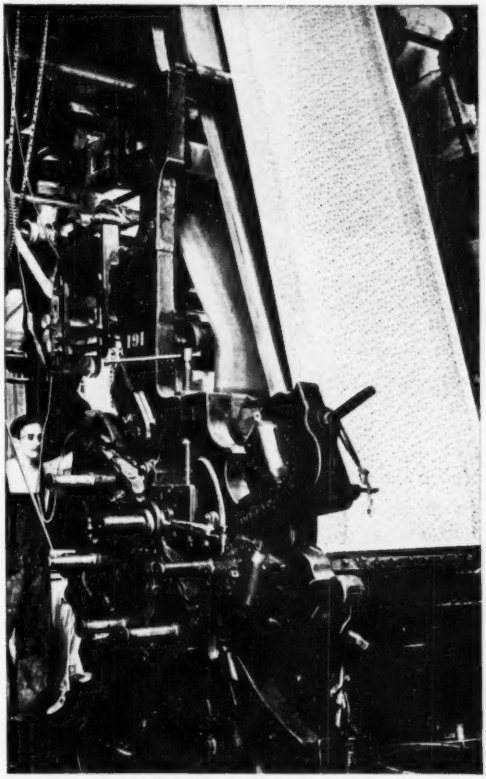
WET PAPER IS STRONG PAPER if it is treated with Cyanamid's PAREZ® Resins. These resins not only improve the wet strength of paper, but increase its dry strength as well. Thus, the uses for paper are broadened, its dependability increased in such applications as grocery bags, frozen food containers, napkins, wiping cloths, map and blueprint papers... to mention a few. Perhaps PAREZ Resins can improve the quality of *your* paper products.

CRABGRASS-FREE LAWNS are the aim of every true lawn lover. Today, thanks to Potassium Cyanate, a recent Cyanamid development, a simple method of killing crabgrass is available to everyone. The effectiveness of Potassium Cyanate has been proved in extensive tests by Agricultural Experiment Stations and Turf Specialists. It is not dangerous to children or pets and is easily sprayed on for overall or spot coverage. Write for complete information.



600 TONS PER HOUR of sulfur or bauxite can be handled by this new ship unloader installed at Cyanamid's Warners Plant in Linden, New Jersey. Consisting of an unloading tower and a new type of boom stacker with auxiliary conveying and distributing equipment, this installation has reduced previous handling time by 50%. The use of the newest methods and equipment is part of Cyanamid's continuous effort to increase operating efficiency and lower production costs.

Chemical Newsfront



COLORED COTTON FABRICS are supplied in numerous, appealing designs by high speed machines like the one shown. The colors used must meet high standards—superior aniline blacks, for example, made from Cyanamid's AERO* Brand Yellow Prussiate of Soda and Yellow Prussiate of Potash. These blacks, in combination with vat dyes, rapid fasts and steam colors, possess good printing properties for both cotton and rayon, producing dense tones with a minimum tendering of the fabric.

*Trade-mark

NEW PRODUCT NEWS

3, 3′-Iminobispropylamine

$$NH\begin{cases} CH_2\,CH_2\,CH_2\text{-}NH_2 \\ CH_2\,CH_2\,CH_2\text{-}NH_2 \end{cases}$$

This compound is a colorless, high boiling, strongly basic amine. It does not discolor as rapidly on storage as most compounds of this type, an indication of greater resistance to air oxidation. It is completely miscible in water, alcohols, hydrocarbons, and most other common organic solvents. Possible uses: synthesis of ion-exchange resins and as an intermediate in pharmaceuticals and dyestuffs.

American Cyanamid Company C-I. 7-51
30 Rockefeller Plaza, New York 20, N. Y.

Please send literature or further data on the items checked:

- ☐ PAREZ Resins
- ☐ Potassium Cyanate
- ☐ 3,3′-Iminobispropylamine

Name ..... Position .....

Company .....

Address .....

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In Canada: North American Cyanamid Limited, Toronto and Montreal

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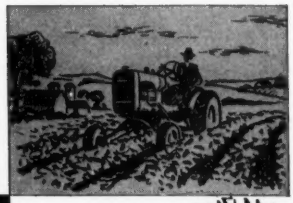
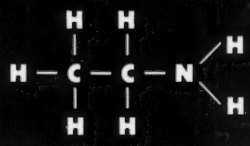
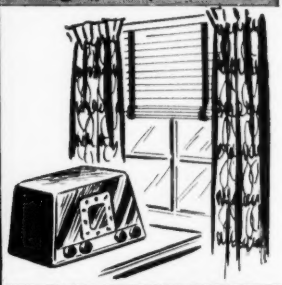
Sharples

DOUBLE CHECKED
FROM RESEARCH
TO INDUSTRY



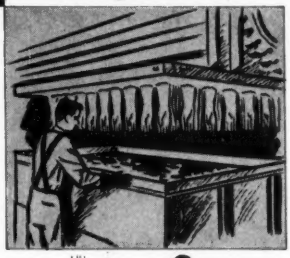
ETHYLAMINE





This primary amine is a versatile compound of value as a reactant or solvent for many processes.

The more important uses, as well as those suggested in the technical literature, are given below to aid you in an evaluation of the usefulness of Sharples Ethylamine.



PRESENT AND SUGGESTED USES

AGRICULTURE: Preparation of dry salt of 2,4-D acid.

CERAMICS: Deflocculating agent for increasing strength of clay bodies.

SOLVENT: Selective solvent in petroleum and vegetable oil refining. Solvent for wide range of organic compounds.

EMULSIONS: Intermediate for fatty acid soaps used as emulsifying agents.

PLASTICS: Condensing agent and intermediate for resins. Preparation of amides (plasticizers).

RUBBER: Synthesis of vulcanization accelerators. Stabilizer for latex.

TEXTILES: Intermediate for surface-active agents, dyestuffs and sizing compounds.

PROPERTIES

Color	**Clear and Water White**
Specific Gravity @ 20/20° C.	**0.78-0.80**
Monoethylamine Content	**70% (min.)**
Flash Point	**Below 0°F.**
Molecular Weight (anhydrous)	**45.08**

Address Inquiries to Department **A**

Sharples Chemicals Inc.

SALES OFFICES:
350 Fifth Avenue, New York · 80 E. Jackson Blvd., Chicago
West Coast: Martin, Hoyt & Milne, Inc.
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Canada: Shawinigan Chemicals Ltd., Montreal, Toronto
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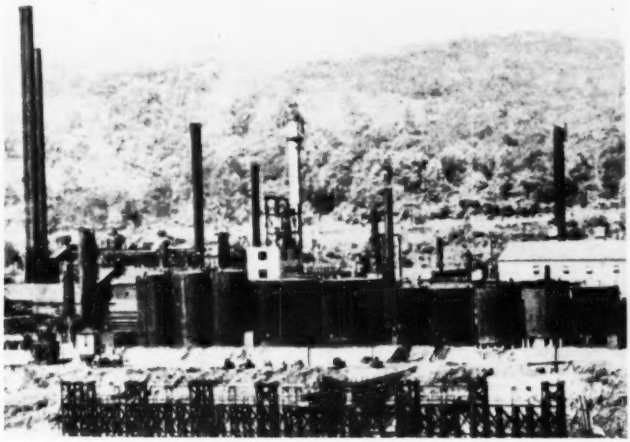
SHARPLES TRADE MARK CHEMICALS

25th YEAR



TAR PROCESSING: Vacuum is the key.

Less Pressure—More Product

Use of a vacuum in the second of two stages in continuous coal tar distillation reduces cracking and formation of carbon during final distillation.

Reduction in cracking makes for purer products—especially in the anthracene fraction.

Vacuum staging—a German addition to double flash continuous coal tar distillation technique is providing industry both a cleaner, more salable product and higher yields of such fractions as anthracene.*

The process, a joint development of Koppers of Essen and the Gesellschaft für Teerverwertung, had its plant-scale baptism in Gelsenkirchener Bergwarke AG's recently reopened Carolineglück works in the Ruhr.

Present versions of the two-stage continuous distillation process as used in the U.S. specify both separations under atmospheric pressure, while this new German application substitutes vacuum in the second stage.

The use of a vacuum in this flash chamber makes possible the use of greatly reduced temperature to effect a separation. This, in turn, cuts cracking and carbon formation.

Corrosion in the stills—a major headache with tar temperatures over 340 C—is reduced since the top temperature reached anywhere in the new system is 330. A second advantage: the purified anthracene oil will cake in simple crystallizers.

The joint-development of the vacuum process by Koppers and GFT is a result of independent developments of each concern. Back in 1935, Koppers first introduced continuous coal tar distillation into Germany. Then, in 1942 the first vacuum unit in Germany was built for the GFT plant at Duisburg-Meiderich—but this used a single stage vacuum flash. It was not until after the war that the two companies teamed together to develop the double flash process.

The Carolineglück plant, chosen as the site of the first installation, utilizes 250 tons of tar per day. Since then a 400 ton/day plant at Becton, England, and a 150 ton/day installation at Uithorn, Holland, have begun operation. Another plant in Germany is scheduled to go onstream in 1952.

The process gets its name from the two flash chambers used in series to fractionate the tar constituents. The crude tar, after dehydration, is heated under pressure to 330 C in a pipe still and flashed in the column operating at atmospheric pressure. The light oil (benzene, toluene and xylene), carbolic oil (tar acids and some naphthalene) and naphthalene are separated in this column.

The residue is then reheated to 320 C in the pipe still and flashed under vacuum in the second column. Wash oil (mainly creosote) goes overhead, the anthracene oil emerges as a sidestream with pitch remaining in the still bottoms.

Usual purification methods are used for all but the anthracene oil. From this an anthracene cake can be crystallized in a simple water-cooled agitated crystallizer. Oil content of the cake, in turn, is readily reduced to 2% by centrifugation, eliminating need for a filter press in oil removal.

The ratio of distillation products naturally will vary as different starting coals are used. Carolineglück, which draws upon seven different cokeries, has an average production of 1% light oil, 3.5% carbolic oil, 11% naphthalene oil, 10% wash oil, 24% fuel oil, 3% anthracene and 47.5% pitch.

The two stage vacuum system is reported to increase oil yield by 5% over the old pot still system. The new method gives a 60% saving in heat required. These, combined with the production of a cleaner, more salable product point up a definite advantage to the vacuum process.

Petro-Process Switch

The petrochemical industry's expansion—by virtue of cheaper production—has been rapid: The 7 million tons of petrochemicals produced in 1950 is double the production three years ago, says Standard Oil Co. (N.J.).

Basic reason for this tremendous expansion is the relative cheapness of carrying out the three main petrochemical processes to produce thousands of specific chemicals. The processes are cracking, synthesis and polymerization. These processes are versatile, for petrochemists estimate that they could manufacture more than half a million chemicals—but the stickler is finding uses for them all.

One of the biggest shots in the arm of the industry came during World War II, when petroleum polymers were the basis for the billion-dollar synthetic rubber industry. The soap industry currently uses many petrochemicals in detergent manufacture, while over 70% of the industrial alcohols used as solvents or as bases for synthesis are now synthetic.

Over half of all organic chemicals now come from oil, Standard reports.

But there's still room for further expanion, since all chemical production from petroleum and natural gas last year required less than a two-hun-

* Adoption by U.S. tar processors depends on demand for anthracene now limited.

PRODUCTION . . . .

dredth by weight of all the oil and gas produced.

•

Battery Charger: A new battery charger for industrial trucks is being introduced by Yale and Towne Manufacturing Co. Main feature: it reduces the human element to a minimum. Plug it in—set clocks—throw a switch. It is available for either lead-acid or nickel-alkaline batteries.

•

Vertical Motors: Vertical, solid-shaft capacitor motors with standardized mounting dimensions are now being marketed by General Electric. They are available in ratings from ¾ to 5 hp. Principal application: jet pumps.

•

Air Filter: Developed originally for the Atomic Energy Commission, an absolute air filter is now being produced in quantity for general commercial use by Cambridge Corp. Designed to remove better than 99.98% of all dust, spores and other microscopic foreign matter from the air, it is especially applicable where absolutely clean air is needed for processing, or where toxic or radioactive fumes or dust must be prevented from escaping to the atmosphere. Two standard sizes are being made with rated capacities of 500 and 850 cubic feet of air per minute.

•

Heavy-Duty Valve: Equipped with totally enclosed gear reduction drive, Valve No. 788, made by R-S Products Corp., features a babbitted seat, stainless steel welded to the periphery of the valve disc. The metal-to-metal seat is said to yield satisfactory shut-off. For instance with a 350 head of ambient water a 36 in. valve had a leakage of only 50 gph.

•

Compact Oven: A table model mechanically convected oven, requiring half the table space of conventional units of this type, has been developed by Electric Hotpack Co. Interior dimensions of the chamber are 12″ wide x 14″ deep x 14″ high; exterior dimensions are 23″ wide x 20″ deep x 40″ high. Temperature range is from 35 C to 180 C.

•

Impeller Pumps: De Laval Steam Turbine Co. is now introducing a new series of multi-stage opposed impeller pumps designed for service up to 1000 gpm and 1200 psi and maximum temperature of 400 F. Main applications suggested: boiler feed service caustic handling, water services such as descaling.

OPTICAL BLEACHES: Sunshine in every soap package.

It Started With Solium

Optical bleaches, now consumed at the rate of over 150,000 pounds a month, are being incorporated into virtually every leading brand of laundry soap and detergent.

Although soap is the principal consumer, sales of these whitening agents are growing in the textile and paper fields too. Among other specialty uses: the new powder bleaches, "invisible" laundry markers.

And public health officials are interested in a test for cleanliness of food utensils and dishes which is based on "invisible" dyes. Manufacturers are also evaluating it, may add fluorescent dyes to dishwashing compounds.

In her post-World War II chemical education, the American housewife developed more than a nodding acquaintance with a number of more or less chemical terms, e.g., DDT, synthetic detergent, aerosol . . . and of course, Solium. The latter, if more of a gift to advertising than to the chemical world, was one of the chemical industry's true "sleepers". Since its incorporation in soap (*CI, Feb. 1948*), Solium and other optical bleaches like it have moved from relative obscurity to a leading place in chemical specialties, and today are potent factors in the sale of almost every leading brand of laundry soap.

These compounds are actually dyes (in that they possess high affinity for textiles, especially cotton) which have the property of absorbing ultraviolet light, and emitting it as light of longer wave lengths—visible light. Most off-color textiles are yellow or gray in cast, and these whiteners (also called brighteners, white dyes, invisible dyes, optical bleaches) emit light that masks these colors. In the case of household soaps, the compound is chosen to yield blue fluorescence, since cotton yellows with age. Although in this respect optical bleaches are similar to bluing which also counteracts the yellow of fabrics, they differ in that they increase total reflectance from the fabric, make colored fabrics appear brighter as well as make white ones whiter. Bluing, on the other hand, cuts down on reflectance from the surface.

Off the Shelf: When ad men first started shouting about "packaged sunshine", many thought it was just another gimmick for selling soap. Soon they found out that wasn't the story at all, that Lever had stolen a march on the field by incorporating in soap these fluorescent brighteners that had been used in the textile industry—particularly in Germany. Most dye companies had similar compounds on the shelf, were soon going through their files to pick out the likeliest possibilities, and shortly thereafter were selling their wares to soap companies and laundry supply houses.

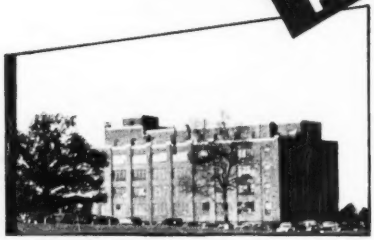
Optical bleaches for soap and detergents can be made from a variety of compounds modified to impart these desired properties: 1. They must not absorb appreciable quantities of visible light while absorbing ultraviolet light. 2. They must be soluble enough so that they can be applied to textiles from a water solution. 3. The material they are to brighten (generally cotton in the case of laundry products) must selectively absorb them. 4. They must emit an intense blue fluorescence. 5. They must be fast to the common household hypochlorite bleach.

Such specific properties are built into compounds with structures exhibiting optical bleaching activity. Diaminostilbene, *beta*-methylumbelliferone and diphenylimidazolone are examples of chemicals that can be used. Although an almost infinite number of modifications of different suitable chemical classes is possible, the majority of products on the market contain the stilbene nucleus modified to suit the intended application.

Soap and synthetic detergents for household laundering are the principal outlets, represent about 95% of the market, now a lusty 150,000-200,000 lbs. a month. This is pretty big business, for with optical bleaches priced at $5 a lb. and up, the total is in the $1 million-a-month class.

Just a Pinch: The percentage of brightener added is not great—1 lb. per 2,000-5,000 lbs. of soap or detergent, with a concentration about midway between these limits the average. It is easily added by blending into the final product or incorporating into the fluid material before spray or drum drying. At the concentration of detergent the housewife finds right for her machine or tub, this quantity imparts a noticeable brightness to laundry, an effect that becomes more apparent with continued use. This is fortunate, for the solubility of most optical bleaches is limited (less than 0.1%), and if greater concentrations were needed to brighten laundry, more soluble compounds would have to

OLIVER PRECOAT FILTER



A Great Filter in a Great Field — Antibiotics!

One of several 8'x10' Oliver Continuous Vacuum Precoat Filters in the big Lederle Laboratories, Pearl River, N. Y. This single division of American Cyanamid Company has eleven Precoats in its plant.

Again Oliver United comes up with the engineering service and the right filter design for handling new and unexplored filtration problems. We refer to the various 'antibiotics' which are making great names for themselves in the field of medicine.

In several plants, on several different products, the Oliver Precoat Filter has proved to be a practical filter for handling the peculiar, almost unfilterable, solids produced in the various processes. The cakes formed are thin, sticky and flow-retarding yet the Precoats handle them effectively and economically. In some instances the Precoats are 'continuous vacuum'; in others, 'continuous pressure.' Either design, they sure are doing good work.

It may well be that your filtration problem doesn't call for an Oliver Precoat Filter (Bulletin 217). Whatever it requires, bear in mind that our engineers will bring to that problem 44 years of filtration experience and many types of filters involving all three classes: continuous vacuum, continuous pressure and batch pressure. We have complete testing facilities to help make the selection the right one for your requirements.

Another Oliver United filter that has already proved its worth in handling 'antibiotics' provides further evidence of Oliver United's broad service to industry. We refer to the Oliver Horizontal Filter. This filter rotates on a horizontal plane with full visibility of feeding, filtering, washing and cake discharging. It is ideal for handling crystalline or coarse products. Bulletin 218 gives the details.

New York 18 — 33 W. 42nd St. Chicago 1 — 221 N. LaSalle St.
Oakland 1 — 2900 Glascock St. San Francisco 11 — 260 Calif. St.
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FACTORIES:
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OLIVER UNITED FILTERS DUFF INC. **Inc.**

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Orillia, Ontario

MEXICO & CENT. AMERICA
Oliver United Filters Inc.
Oakland, Calif.

INDIA
Dorr-Oliver (India) Ltd., Bombay

EUROPE & NORTH AFRICA
Dorr-Oliver S. A. Brussels
Dorr-Oliver S.N.a.R.L. Paris
Dorr g.m.b.h. Wiesbaden (16)
Dorr-Oliver Co., Ltd., London, S.W. 1
Dorr-Oliver S.a.R.L. Milano
Dorr-Oliver, N.V. Amsterdam-C

PHILIPPINE ISLANDS
E. J. Nell Co.
Manila

HAWAIIAN ISLANDS
Honolulu
A. R. Duvall

WEST INDIES
Wm. A. Powe — Havana

SOUTH AMERICA & ASIA
The Dorr Co.
Stamford, Conn.

AUSTRALIA
Hobart Duff Pty., Ltd.
Melbourne

SOUTH AFRICA
E. L. Bateman Pty., Ltd.
Johannesburg, Transvaal

be developed. In fact, the continued growth of liquid detergents is giving some manufacturers concern, has spurred work to increase solubility.

Not only housewives, but commercial laundries as well, have been sold on the virtues of brighteners. They are interested in turning out whiter clothes, but equally important, aim for uniform shades, practically an impossibility with laundry bluing but easily attainable with brighteners. Different amounts of brightener are required, depending upon the stage of the wash cycle at which it is added. If added during a soaping step, for example, more is needed than if added in a final rinse where wash-fastness and hypochlorite stability are not major considerations.

Because of low solubility, stock solutions can't be made up, so laundry jobbers, to whom dyestuffs makers sell, usually cut back the brighteners with alkali and in some cases add perborate. Then too, the materials may be incorporated in starches, sours, etc., making, in the case of sours, acid stability a prime requisite.

Powder Bleaches: A new market for brighteners is represented by powder bleaches (*CIW, April 14*), some of which employ them in place of, or in conjunction with sodium perborate (a "booster" of the brightening action, as is alkali). New brands of these products have been appearing, and if the trend continues, they could consume substantial quantities.

Another use of interest to specialties makers lies in the "fluorochromatic method" for determining the presence of organic matter on dishware, a development of Emil Domingo of the New York City Department of Health. He told members of the Chemical Specialties Manufacturers Association about it last December, and that group has a special committee checking on it. Basically it consists of immersing a dish in a solution of an optical dye, rinsing, and examining under filtered ultraviolet light. The dye adheres to organic matter not removed in cleaning, and fluoresces to reveal it. This simple and rapid method for inspection of utensils in food plants and restaurants has many advantages over bacteriological methods, and if widely adopted, manufacturers of dish-washing compounds may include suitable dyes in their formulations.

While such specialties applications offer new outlets, both the textile and paper (for whitening high quality products) fields continue to grow as consumers. Activity in textiles (which probably consume about half of the brighteners not going into household soap) is centered around developing brighteners with affinity for all types of fabrics. Among the largest factors in this field are Calco Chemical Division of American Cyanamid, Ciba, Du Pont, Geigy and General Dyestuff.

Household laundry products, still the big plum, contain whiteners developed primarily for cotton. Here the principal manufacturers include Antara Products (division of General Dyestuff handling General Aniline's nontextile sales), Calco and Du Pont.

Relief Ahead on Soaps

The final draft of a revision of Ceiling Price Regulation 10 has been approved by the Advisory Committee of the Soap, Cleanser and Synthetic Detergents Industry, but it has not yet been sent to price director Michael Di Salle's office, and the Office of Price Stabilization does not yet know when it will be issued.

CPR-10 covers sales by makers of a wide range of soaps, soap products, cleansers and synthetic detergents commonly sold for household use. Ceiling prices are set at the highest prices established by manufacturers on the basis of sales during the month of December, 1950. The industry feels that the regulation is ambiguous, and at a meeting with OPS officials, worked out a revised form to include sales for industrial, institutional and government use as well, and to more clearly define the items covered.

Ceiling prices under the revised regulation would still be on the same general level as under the present CPR-10. However, it provides that manufacturers of liquid and paste soaps and cleaning specialties using imported vegetable oils as ingredients may add any increased costs of such oils over the dollars-and-cents prices in the regulation. The revision would also permit adding any authorized increase in domestic vegetable oils, ceiling prices of which are set under CPR-6 (Fats & Oils).

•

Whittemore Shift: First truckload of machinery has been moved from the Cambridge, Mass., plant of Whittemore Corp., to the company's new shoe polish plant at Fayette, Ala., which will become Southern headquarters for the century-old company. The machinery shipped from Cambridge, as well as newly-purchased equipment, is expected to be in operation by the end of the month.

Aerosol Solves Lubricant Problem

Regal Chemical and Army Engineers team up to develop special aerosol-dispensed lubricant for cylinders of oxygen plants.

The new method of lubricating these cylinders is an out-growth of research conducted by the Army Engineer Research & Development Laboratories (ERDL) on preservatives used in preparing equipment for shipment. Plants to turn out oxygen are items which the Army Corps of Engineers is charged with developing, procuring and maintaining; and in seeking to pressure-pack a special lubricant for cylinders of such units, the engineers turned to Regal Chemical Corp., Brooklyn, N.Y., aerosol pioneer.

J. A. SARGEANT: Ringing the bell with an aerosol.

James A. Sargeant, chief of ERDL's Packaging Development Branch told CHEMICAL WEEK that petroleum lubricants cannot be used with oxygen plants, so a fluorocarbon (Dow Chemical product) is employed. The formulation, called fluorolube HG anti-corrosive spray (it has an added corrosion inhibitor), is stable in oxygen.

Developing a suitable valve was the key to a method of pressure-packing and applying the lubricant, and Regal, which is now making the units, devoted about fourteen months to the project. The applicator tube is of a soft metal composition, can be bent and shoved through cylinder ports or other openings. The nozzle at the end is pierced with minute holes at angles around its perimeter so that the spray completely covers cylinder walls when button on top of the can is pressed.

American industry has the productive capacity . . . the skilled manpower . . . machinery . . . engineering ability . . . experienced management. Give it raw materials, and the finished products will roll off the assembly line in greater amounts than ever before.

That's a service job that Celanese is doing for many industries—producing volume quantities of organic chemicals that are basic materials in the manufacture of plastics, textiles, adhesives, laminates, paints, and finishes. Employing the most advanced methods in production, Celanese is operating on a round-the-clock schedule to meet the ever-increasing demand for these organics.

The modern Celanese chemical plant near Bishop, Texas, located in the heart of the gas fields, draws on nearby sources of natural gas to produce these organic chemicals—assuring production continuity.

Celanese also serves industry through experimental laboratories and pilot plants . . . a nationwide distribution system . . . and technical data and assistance backed by a generation of experience in petroleum chemistry.

Celanese Corporation of America, Chemical Division, Dept. 501-G, 180 Madison Avenue, N. Y. 16.

Celanese* CHEMICALS

*Reg. U. S. Pat. Off.

ACETIC ACID • ACETALDEHYDE • FORMALDEHYDE • PARAFORMALDEHYDE • ACETONE • BUTYL ALCOHOLS • METHANOL
NORMAL PROPANOL • BUTYLENE GLYCOLS • DIPROPYLENE GLYCOL • PROPYLENE GLYCOL • PROPYLENE OXIDE • TRICRESYL PHOSPHATES

SPECIALTIES . . . .

Fly Fighter: A new fly killer boasting a unique formulation and being sold solely by radio-solicited mail orders is making a heavy dent in the household fly spray field. It's Fli-Pel, a synergistic combination of lindane, allethrin and a number of other constituents in which the manufacturer, Fli-Pel Co. (Chicago), has such faith that it is offering the product on a money-back guarantee.

The insecticide is being plugged over 520 radio stations, and soon will have a TV cartoon sequence added to its "sales force." Rather strong claims are made for Fli-Pel over the air—treat a 6-room house for $2.98 (retail price of one pint) and if one fly enters and lives, you get your money back—but the company reports that sales are booming and there are extremely few returns. Any sprayer can be used to treat walls, ceilings, doorways and garbage disposal units.

•

Push-Button Fertilizer: An expenditure of more than $250,000 for modernization of its Fort Pierce, Fla., plant has given Naco Fertilizer Co. what it terms a "push-button" operation just going into full production. In addition to the fertilizer plant, the company will have a complete insecticide unit.

•

Diversey Subsidiary: Diversey Corp. has formed a wholly-owned subsidiary, Diversey International Corp., to handle sales of its chemical specialties line in countries of the Western Hemisphere outside of the U.S.A.

•

Emulsion Cleaner: Fine Organics (New York City) has developed FO-106, a solvent emulsion cleaner concentrate for motor fleet and industrial users. It is said to have advantages over cresylic acid types in that it is odorless and won't cause skin burns. The new product meets Air Force Specification 200015E and Navy Specification C-147, Type I. In use, it is diluted with 4-9 parts solvent (kerosene or Stoddard solvent), is applied to metal, concrete or painted surfaces by brush or spray, then rinsed off with water.

•

Nylon Anti-Static: A new compound to prevent electrostatic charges in spinning and processing nylon has been developed by Dexter Chemical Corp. (New York City). Called Dextrol Lektrostat B, it is readily soluble in water, compatible with anionic agents under normal processing conditions. It can be added to the dye bath, to a separate bath after dyeing, or to a padder for application in the usual padding operation.

FACTS about the GLYCOLS

In times of shortages, steady profitable production is frequently endangered by the inability to get the proper raw materials. However, complete information about the various applications of chemical raw materials may help you use the materials currently in short supply in the most profitable manner. Despite today's shortages, Dow is also interested in helping you conduct experimental work with the glycols. Further research today may suggest new uses for the glycols, new ways in which they can serve you in future markets. For more information and technical assistance, write Dow using the coupon below.

The chemistry of the Glycols centers around the two hydroxyl groups which characterize them as glycols. They are intermediate in their properties between the alcohols with their single hydroxyl group and glycerine with its three hydroxyl groups. Like glycerine, the glycols are normally quite stable in air. At high temperatures, they tend to oxidize in air, giving rise to a wide variety of oxidation products such as aldehydes and acids. This oxidation can be reduced by the use of inhibitors so that the glycols can be used as heat transfer media.

THE DOW CHEMICAL COMPANY
MIDLAND, MICHIGAN

Properties and Specifications of the Glycols

	Chemical Formula	Molecular Weight	Specific Gravity 25/25°C.	Freezing Point °F.	Boiling Point °F.	Flash Point °F.	Fire Point °F.
Ethylene Glycol.....	$HOCH_2CH_2OH$	62	1.112	7	390	241	257
Diethylene Glycol.....	$HOCH_2CH_2OCH_2CH_2OH$	106	1.116	15	475	275	293
Triethylene Glycol.....	$HOCH_2CH_2OCH_2CH_2OCH_2CH_2OH$	150	1.122	21	545	309	345
Propylene Glycol, Industrial.	$CH_3CHOHCH_2OH$	76	1.036	(−80)*	369	210	216
Dipropylene Glycol.....	$HOC_3H_6OC_3H_6OH$	134	1.025	(−54)*	446	244	253

*Pour Point

SPECIFICATIONS

	Specific Gravity @ 25/25°C.	Boiling Range 760 mm. Hg 5 to 95%	Acidity, Max. (As Acetic Acid)	Water Max.	Color Apha Max.
Ethylene Glycol.....	1.112-1.115	194-200°C.	0.01%	0.5%	15
Diethylene Glycol.....	1.115-1.118	240-250°C.	0.01%	0.2%	—
Triethylene Glycol.....	1.121-1.125	275-295°C.	0.01%	0.1%	60
Propylene Glycol, Industrial.	1.035-1.037	185-190°C.	0.005%	0.5%	10
Dipropylene Glycol.....	1.018-1.028	220-240°C.	0.01%	0.1%	20

This is No. 2 of a series of Dow advertisements you may wish to keep on file for reference and information. Write Dow for reprints.

SOLVENTS:

Glycols can be used to excellent advantage with materials which must be formulated with water, but which are not soluble in water. In this manner, Glycols can be used in cutting oils (soluble oils), textile lubricants, dry cleaning soaps, and industrial hand soaps to name a few applications. Glycols are used in the preparation of hydraulic fluids because of their solution compatibility, and in steam-set printing ink where the resins are dissolved in Glycols and precipitated by water or steam to set the ink.

Besides acting as solvents, Glycols offer stability and practicality because of their low volatility, high flash point, and favorable viscosity characteristics. For a better solvent, investigate the future role that Glycols can play in your production.

ANTIFREEZE AGENTS:

The Glycols are most well-known for their use in permanent-type automotive antifreeze, and they also give dependable protection to water-containing materials subject to low temperatures. Some common industrial examples are: water-base paints, cooling sprays, water-base hydraulic fluids, glass cleaners, de-icing compounds, cleaning compounds, sprinkling systems, radiant heating systems, and aircraft water supplies.

One of the family, Ethylene Glycol, is reacted with Nitric Acid to produce a lower freezing dynamite. Glycols can replace salt in cooling brines where they decrease the corrosion factor. Glycols added to gas well effluent prevent the water present from freezing on cooling when removing casing head gasoline.

HUMECTANTS:

Is the "drying out" of your product cutting into profits? If so, consider the future job that Glycols can do for you. The ability of the Glycols to absorb moisture out of the air can be put to profitable use to secure: longer freshness for cigarette tobacco, baked goods and food; softening agents for paper; dehumidifiers for air and other gases; protection against the drying out of print pastes in textile processes. Glycols can also be added to sizes to prevent flaking. Be sure to start your experimental work with Glycols today if your materials are liable to excessive drying out.

PLASTICIZERS:

For materials too brittle, Glycols are very effective as plasticizers. For example, by plasticizing the binder. Glycols add pliability and softness to composition cork sheets. They can be reacted with polybasic acids to give alkyd resins which are softer than corresponding ones made from glycerine. Other products which have been softened are moistureproof cellophane film, glues, some fibers and papers.

OTHER USES:

There are many examples of the versatility of the Glycols. Ethylene Glycol, for instance, in conjunction with Boric Acid and Ammonia is widely used in the manufacture of radio, radar, and television condensers: it is also used as a mold release fluid for asphalt grave vaults. Propylene and Triethylene Glycol, in vapor form, have been used in the control of air-borne bacteria. And, in some cases, the Glycols can be used as lubricants. Be prepared for future markets . . . start your experimental work with Glycols.

If you have a Glycols problem

WRITE DOW FOR INFORMATION AND TECHNICAL ASSISTANCE.

The Dow Chemical Company, Dept. OC-11, Midland, Michigan

☐ **Please send me additional literature about the glycols.**

☐ **Please send _____ reprints of this advertisement.**

Name _____ Title _____

Company _____

Address _____

City _____ State _____

DOW

CHEMICALS

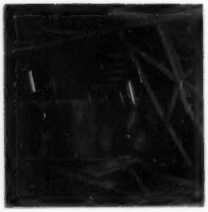
INDISPENSABLE TO INDUSTRY AND AGRICULTURE

BUILDING FOR THE FUTURE

Despite the uncertain raw materials situation, Advance Solvents & Chemical Corporation is producing sufficient Soligens (Naphthenate Driers) to satisfy our customers' requirements.

Soligen Driers are now manufactured, as they have been for more than eighteen years, under the formulations and manufacturing processes developed by and for Advance Solvents & Chemical Corporation.

Advance Solvents & Chemical Corporation, the first commercial supplier of Naphthenate Driers in the United States, with its trained staff, is well-qualified to give users of these driers competent technical service. Our modern control laboratary assures Soligen users of consistent high quality and uniformity.

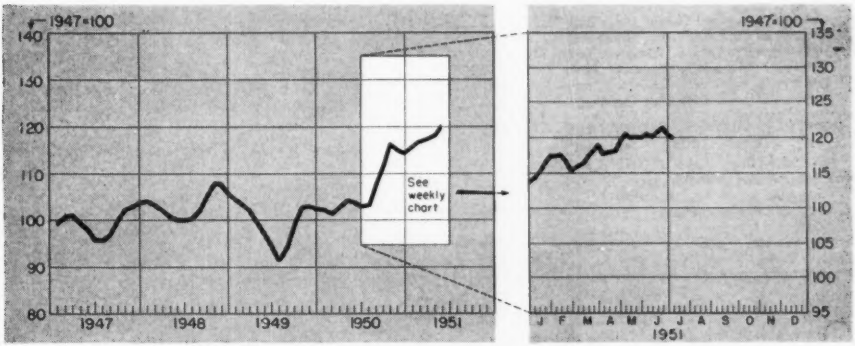


PHOTOS: STANDARD OIL CO. (N. J.)

ADVANCE SOLVENTS & CHEMICAL CORP.

245 Fifth Avenue · New York 16, N. Y.

CHEMICAL MARKETS....



CHEMICAL INDUSTRIES OUTPUT INDEX — Basis: Total Man-Hours Worked in Selected Chemical Industries

The chemical resale market this week had little trading to do, but much to talk about. Mostly the verbal speculation tends to revolve upon two main topics: 1) prospects of peace in Korea, and 2) the future of price controls. Until some light can be shed on these questions, the typical trader won't be either bull or bear.

No slackening is expected in the scheduled fall upturn in defense orders, though prospects are held out for a Korean settlement. Defense Boss Charles E. Wilson emphasizes again that the defense program is going ahead as planned to meet future threats of global aggression. Congress seems generally in accord with this policy.

The chemical industry is counted on as a mainstay of the accelerated defense production. Nevertheless, many chemicals will be short at least until next year.

Whether shortages become more severe depends not only on how much—but how soon. Current and prospective chemical shortages have been listed by the National Production Authority in the survey, Basic Materials and Alternates. But non-essential consumers will find the actual list much longer than the published one, if defense demands move swiftly.

NPA actions point up NPA views of things to come: Allocations were imposed this week on methyl chloride and sebacic acid. Reasons: Sebacic acid, derived from much-too-short castor oil, is needed for nylon plastic and low-temperature plasticizer materials. Methyl chloride is headed pell-mell for synthetic rubber, already preempting 75% of the entire output.

Other Government agencies took a hand in conserving chemicals. Phthalic anhydride, as tight as ever, was placed on the restricted export list by the Office of International Trade. Export licenses are now required for shipments to Group R countries (those outside the Western hemisphere), and end-use must be specified henceforth.

MARKET LETTER

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
Chemical Industries Output Index (1947=100)	121.0	120.5	103.0
Bituminous Coal Production (Daily Average, 1000 Tons)	1,920.0	1,839.0	1,697.0
Steel Ingot Production (Thousand Tons)	2,029.0	2,015.0	1,830.0
Wholesale Prices—Chemicals and Allied Products (1926=100)	137.3	139.2	114.9
Stock Price Index of 14 Chemical Companies (Standard & Poor's Corp.)	234.1	234.5	180.7
Chemical Process Industries Construction Awards (Eng. News-Record)	$13,240,000	$5,475,000	$9,162,000

MONTHLY BUSINESS INDICATORS—WHOLESALE PRICES (1926=100)	Latest Month	Preceding Month	Year Ago
All Commodities (Other than Farm and Foods)	171.5	172.2	147.6
Chemicals and Allied Products	142.8	144.3	116.4
Chemicals	138.2	138.2	116.5
Drugs and Pharmaceuticals	185.2	184.5	122.3
Fertilizer Materials	117.1	117.8	116.8
Oils and Fats	186.4	198.7	122.2

Mounting copper costs—which have long crowded sulfate producers—have forced one major copper sulfate maker to boost prices from $8.95 to $9.45 a cwt.

There's only one joker in the supply picture: exports. If curbs on overseas shipments are maintained, our sulfate needs will be met. But should exports gain, our position could be serious.

Right now domestic stocks of sulfate are at a dangerously low one-week level. (Even though output is at a high 9,500 tons a month, shipments have been crowding 10,000 tons.)

One note of cheer: Exports have been pared in recent months by 1,100 tons/month.

But all-in-all, the chemical market still tends toward softness, with price declines exceeding price rises. Most price paring is at the resale level, where profit margins have usually been ample to absorb the shrinkages.

Some unloading is currently under way by those who suffer from bulging inventory, prefer more cash and less uncertainty. This tendency, plus improvement in imported supplies, is behind the urea price history in resale. Ten weeks ago, urea was selling at better than 13¢ a pound; today it's 8¢, about 2¢ over the producers' offerings.

Even resale citric acid, in steadfast demand since late 1950, finally took a 5¢ a pound drop. Sales are now moving at 50¢ a pound, still well above the manufacturers' 27¢ a pound quotation. Reason: More production forthcoming from Chas. Pfizer & Co. and from Miles Laboratories.

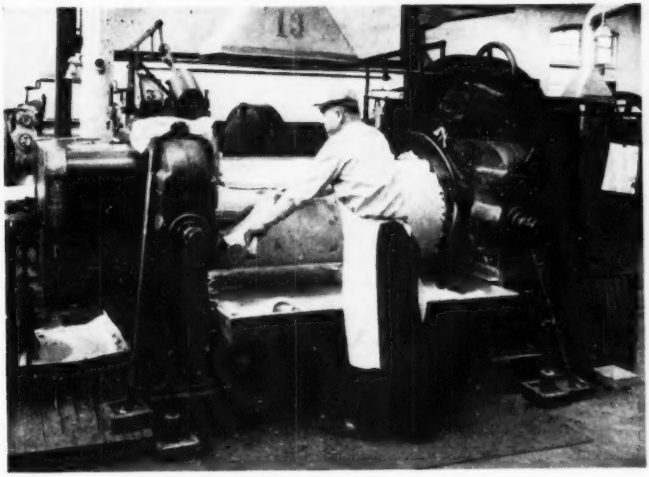
A straw in the wind worth watching is the recent price reduction by Monsanto of industrial alcohol. Price lowering ranges from 2-4¢ a gallon, with SDA-1 now at 98¢ and proprietary at 99½¢ a gallon in drum carloads.

This action may presage similar moves by other fermentation alcohol producers, may generally narrow the differential over synthetic alcohol. Reasons: fewer calls from paintmakers, less alcohol required for butadiene.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending July 9, 1951

	Change	New Price		Change	New Price
UP					
Ammonium sulfate, coke-oven, ton	$8.00	$40.00	Copper sulfate, cryst, c.l. cwt.	$.20	$9.15
DOWN					
Carnauba Wax, No. 1 Yellow	.04	1.28	Rosin, WW, cwt, Savannah	.75	8.50
Linseed Oil, raw, tankcars	.005	.165	Sorbitan tristearate	.02	.34
Ouricury Wax, refined, bags	.03	.85	Tung Oil, imported, tanks	.005	.375
Oiticica Oil, tankcars	.005	.275	Turpentine, gum, Sav., gallon	.015	.785

All prices per pound unless quantity is stated



PLASTICIZERS: More needed, more coming, as . . .

Iso-Octyl Branches Out

New production of iso-octyl alcohol in 1952 will bring in Gulf Oil and Standard of Indiana to join Standard of New Jersey.

Reasons for expansion: Demand for phthalate plasticizers and boom in lubricating oil additives.

Producers see further growth even if competition should sharpen . . . put their faith in the Oxo process.

By this time next year, the roster of commercial iso-octyl alcohol producers will include three names instead of one. For this week, Gulf Oil Corp. and Standard Oil of Indiana each decided to turn out this versatile 8-carbon alcohol. The method they will use: the Oxo process, pioneered in the U.S. by Standard Oil of New Jersey.

Gulf Oil intends to make around 10 million pounds annually of the alcohol at its huge Port Arthur, Texas, refinery, will market it directly to waiting customers. Standard of Indiana will make about the same amount at Wood River, Ill., ear-marked chiefly for the oil additive business, and handled through its Indoil sales subsidiary. Standard of New Jersey which has been in operation at Baton Rouge, La., for some three years, markets its output via Enjay.

Plastic Needs: Jersey Standard's output has been in heavy demand to make phthalate esters, and any new production of iso-octyl alcohol will be roundly cheered by supply-pinched plastics people. (An added dividend due at the same time: some new phthalic production.)

Despite these bright prospects, iso-octyl phthalate use is still somewhat overshadowed by its near-relation, 2-ethyl hexanol—used in making the phthalate ester (DOP) for vinyl resin plasticizers. U.S. Tariff Commission figures for 1950 highlight the difference in current usage: 60 million pounds of DOP vs. 2.6 million pounds of the iso-octyl phthalate.

This comparison, of course, is no measure of the potential of iso-octyl esters. As yet such compounds are still in the comparatively early stage of evaluation.

Lots of Oil: Even though the plasticizer market looks inviting, an equal attraction to the iso-octyl makers is the up-and-coming oil additive business which has grown prodigiously in the last decade.

Iso-octyl alcohol, in the form of various derivatives, finds a growing demand in this field, chiefly for upgrading viscosity index. Not only do such derivatives improve other oils, but octyl alcohol adipates themselves are good-quality synthetic lubricants for jet engines. Here, the extremes of temperature make its high viscosity index of particular importance.

Other Plans: These applications in plasticizers and lubricants are the most clearly outlined paths to commercial expansion—but manufacturers are pursuing other outlets with equal diligence. Use in detergents, antifoaming agents, and organic synthesis will doubtless take more.

For the next few years, iso-octyl producers hope to supplement the 2-ethyl hexanol market for plasticizers, and corner as large a share of the lubricant market as supplies permit. In the long run, they feel that the economic Oxo process will put them in a favorable spot even if competition gets keener.

OPS Fate Pends

This month will tell the story on the future of price controls. Any further price rollbacks have been held up for the time being until Congress and the Administration can see eye-to-eye on whether to continue the powers of the Office of Price Stabilization—and if so for how long.

And that presents two questions: What effect has OPS had on chemical prices, what would happen if price ceilings were scuttled? There's no simple answer but a quick review of past price trends points up what has happened, indicates the shape of things to come.

Post-War: Looking back to 1946 and 1947, industry had to work round-the-clock to meet the bellowing demand of long-deprived civilians. In 1948, chemical production began to hit a record stride and by year's end, supply and demand were evenly matched. In the spring of 1949, business started to get the inventory jitters, when textiles hit the skids. But by the end of the year, judging from the production rebound, the boom was riding high again.

Payments Due: During the post-war reconversion, prices of manufactured chemicals held remarkably firm, despite these shifts in supply and demand. The price index for all chemicals reached 125 (1926=100) for the year 1948, and remained around 120 throughout 1949, even during the production-sales let-down.

The biggest changes by far were in two groups: oils and fats, and drugs and pharmaceuticals. Oils and fats, mostly imported, leaped to new highs in 1946-47 when supplies from the South Pacific fell far behind soap-

CHEMICAL MARKETS. . . . . .

makers, demands. Then, by 1949, improved supplies of oils and the meteoric rise of synthetic detergents, tumbled the index from around 225 to a subdued 125 for most of 1949. Drugs and pharmaceuticals, also largely imported or natural products slipped from 150 in 1948 to 125 by the end of 1949, as supplies bettered.

War Clouds: Prices hit an even keel during the first half of 1950, and production maintained levels reminiscent of the 1948 peak. From the advent of Korea until February 1951, oils and fats shot to 220, and drugs and pharmaceuticals hit a near-record 180.

Fortunately, the index for all chemicals had climbed only to 138, and fertilizer materials actually showed a slight dip during the period.

Controlling Factors: The general price rise was slowed by the OPS in January, 1951 although most chemicals reached peaks in February. Since then prices have been falling slowly but definitely, headed by a sharp decline in oils and fats, now back at 175.

Signs from Washington point to a lesser role for the OPS in the economic picture. It is almost certain that price rollbacks, at least, will either be abandoned or toned down.

Even if OPS were abolished this week, a wave of scare-buying is not likely as long as supply and demand are in reasonable balance. In the event of large-scale defense mobilization, demand will tend to forge ahead —and prices will rise. But the OPS has already done its major job for the chemical industry.

GOVERNMENT NEEDS

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Chief, Procurement Division, Supply Service, Veterans Administration, Washington 25, D.C.—attn: Mr. J. R. Barr, Executive 4120, Ext 3860.

July 18	M-4		2592	Extinguisher fire portable
July 19	M-5	can	624	Cement rubber natural
		"	1200	Turpentine gum spirits
		"	68	Varnish cabinet rubbing
		"	68	Varnish interior flat
		"	184	Varnish transparent
		"	162	Varnish shellac regular bleached light body
		"	192	Varnish shellac orange medium body

GOVERNMENT AWARDS

Item	Supplier	Location
Navy Purchasing Office, New York, New York:		
Alcohol, ethyl, denatured	William S. Gray & Co.	New York, N. Y.
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Compound, storage battery sealing	Elec. Stge. Battery Co.	New York, N.Y.
Soap powder strongly alkaline cleaner	Murro Chemical Co. Inc.	New York, N.Y.
Soap powder strongly alkaline cleaner	Spazier Soap & Chem. Co.	Monica, Calif.
Compound, dishwashing, type 11	Klienzade Products, Inc.	Beloit, Wis.
Compound, dishwashing, type 11	The Theobald Industries	Kearny, N.J.
Compound, dishwashing, type 11	Spazier Soap & Chem. Co.	Monica, Calif.
Raritan Arsenal, Metuchen, New Jersey:		
Compound—anti-freeze, U.S. Army Spec. 4-1116 in one gal. containers export-packed domestic	National Carbon Co.	New York, N.Y.
Compound—anti-freeze, U.S.A. Spec. 4-1116.	National Carbon Co.	New York, N.Y.
	Victory Oil Co.	Phila., Pa.
	Thompson Chem. Co.	Pawtucket, Rhode Island
	Commercial Solvents Corp.	New York, N.Y.
	Puritan Co. Inc.	Rochester, N.Y.
	Imperial Products Co.	Chicago, Ill.
Compound—Anti-freeze, U.S.A. Spec. 4-1116	Reliance Varnish Co. Inc.	Louisville, Ky.
	Dagmar Chem. Co. Inc.	Glenbrook, Conn.
	National Carbon Co.	New York, N.Y.
	Hobb Swetname Co. Inc.	Wichita Falls, Texas
	U.S. Ind. Chemicals	New York, N.Y.
	Dow Chemical Co.	Midland, Mich.
	Wyandotte Chemicals Corp.	Los Angeles, Calif.
Compound—paint stripping, Spec. ES-452b.	Jones-Hamilton Co.	Oakland, Calif.
	Optimus Detergents Co.	Matawan, N.J.
	Continental Chem. Co	N. Sacramento, Calif.
	Wyandotte Chem. Corp.	Wyandotte, Mich.
	Turco Products, Inc.	Los Angeles, Calif.
	The Moran Co.	Dallas, Texas
Dessicant—activated, Spec. JAN-D-169, 100 lb containers	Filtrol Corp.	Los Angeles, Calif.
—ditto—5 gal	Culligan Zeolite Co.	Northbrook, Ill.
Desiccant—activated, type V, Grade B, spec. JAN-D-169 150 lbs. in 100 lb size sealed container	Filtrol Corp.	Los Angeles, Calif.
	Filtrol Corp.	Los Angeles, Calif.
—ditto—135 lbs		
Compound—Cleaning, Alkali Type, spec. TAC-ES 382b in 400 lb. nonreturnable drums	Turco Products, Inc.	Los Angeles, Calif.
	Axton Cross Co.	Shelton, Conn.
Compound—Cleaning, Spec. TAC-ES-382b	Wyandotte Chem. Corp.	Los Angeles, Calif.
	Murro Chem. Co. Inc.	New York, N.Y.
Fluid—Hydraulic brake Spec. MIL-F 2111 in one gal. container	R. M. Hollingshead Corp.	Camden, N. J.
	Puritan Co. Inc.	Rochester, N.Y.
	Excelo Mfg. Co.	Alhambra, Calif.

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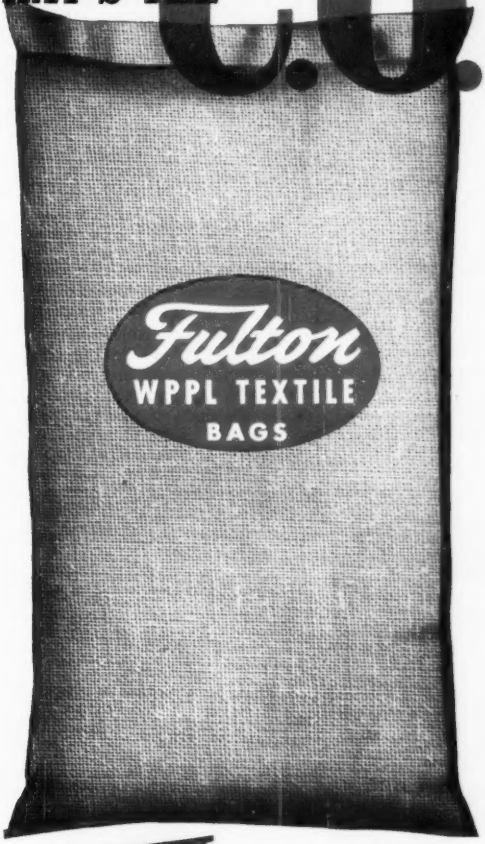

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BOOKS.....

Chemistry of High Polymers, by H. W. Melville, and **Surface Chemistry** by E. K. Rideal. Chemical Publishing Co., Inc., New York, N.Y.; 76 pp., $2.50.

This is a two-part book with the first section devoted to a discussion of the synthesis, molecular size and molecular structure of high-polymer substances. Since practical developments ran ahead of theory on this subject, the theoretical aspects of high polymers are worked out from the observation of polymerization processes and of the properties of high polymers. The second part discusses the essential facts of surface chemistry.

The Chemistry and Technology of Food and Food Products, second edition, in three volumes, edited by Morris B. Jacobs. Interscience Publishers, Inc., New York, N.Y.; Vol. I, 856 pp., $12.

This three volume work covering the subject of food chemistry and technology is to be completed in October, 1951 with the appearance of the last book. The main divisions of the first volume deal with the fundamental principles, unit operations and processes and sanitary and quality control. The other two books will be concerned with the topics of the various types of foods, preservation and production. Revised and expanded, new chapters appear on such topics as instruments in the food plant, essential oils, and the use of enzymes in food production.

MEETINGS..

Natl. Soybean Processors Assn., annual meeting, Edgewater Beach Hotel, Chicago, August 16.

Tanners' Council of Amer., annual meeting, Waldorf-Astoria Hotel, New York, N.Y., August 21-22.

Amer. Pharm. Assn., Statler Hotel, Buffalo, N.Y., August 26-31.

Summer Symposium, Nuclear Energy Development, annual meeting, Oak Ridge, August 27-September 7.

Amer. Chem. Soc., Diamond Jubilee Meeting, New York, N.Y., September 3-7.

Amer. Soybean Assn., annual meeting, Fort Des Moines Hotel, Des Moines, Iowa, September 6-8.

PICTURES IN THIS ISSUE

Cover (top)—Cortlandt V. D. Hubbard; p. 12—Glenn L. Martin Co.; pp. 16 & 33—Reni Photos.

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT: BUSINESS: **OPPORTUNITIES** EQUIPMENT: USED OR RESALE

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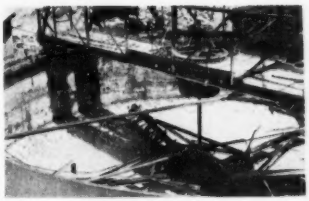

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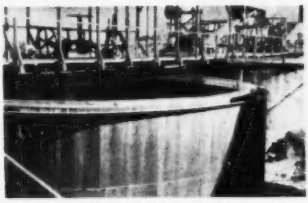

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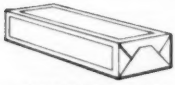

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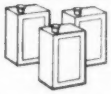

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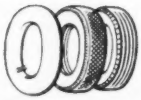

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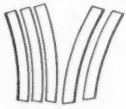

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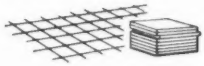

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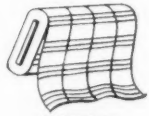

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MAKES IT HANDY

Products and literature in this issue are listed on these pages. There are three indexes. (1) Editorial items on new products, new equipment, new literature; (2) products advertised. (3) The index of advertisers is on the following page.

THE NUMBERS

Advertisements:—There is a page number on the coupon for each advertisement. Before the number, may appear, L, R, T, B (left, right, top, bottom), locating the ad on the page; small letters following (a,b,c) indicate additional products in the advertisement.

Editorial Items:—Numerals are page numbers; the ABC's distinguish among items where more than one is on a page. There is a number on the coupon for each item referring to new products, equipment, and literature.

EDITORIAL ITEMS

For more data, circle number on coupon

NEW PRODUCTS

MPS-500 Plasticizer 24A

NEW EQUIPMENT

Air Filter 30C
Battery Charger 30A
Compact Oven 30E
Heavy-Duty Valve 30D
Impeller Pumps 30F
Vertical Motors 30B

CHEMICALS

Elastomers and Plastomers 48C
Protective Coating Specialties 48A
Rustbound Primer 48F
Soybean Lecithin 48E
Test Solution 48B
Wax 48D

TECHNICAL LITERATURE

EQUIPMENT

Analog Computers 48N
Catalytic Combustion 48M
Conveyor Belts 48K
Dehumidification 48O
Differential System 48J
Mud Filter 48G
Process Machinery 48L
Steam Traps 48I
X-Ray Spectrometer 48H

PRODUCTS ADVERTISED

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Chemicals
- Aromatic 2
- Berez 19e
- Bicarbonate of soda B35a
- Coal-tar 25
- Detergents, Santomerse 80 ..... 21-21g
- Detergent & wetting agent, Santomerse I 20-21f
- Dichloroacetaldehyde 1
- Diethyl succinate 20-21c
- Ester gums 19c
- Esters, maleic modified 19g
- Ethylamine 28
- Fatty acids T44
- Fatty acids, handling and testing booklet 49e
- Gilsonite 1a
- Gloss oils 19f
- Gluconic acid 22
- Glycols 36-37
- Heat-transfer medium, Aroclor 1248 ..... 20-21e
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- Isopropenyl acetate, bulletin F-7609 3
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  - Finishes 34f
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  - Pale wood 19d
- Sal soda B35c
- Sodium formate 50
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- Styrene monomer, bulletin C-119 17
- Sulfur dioxide 30
- Turpentine, wood, steam distilled 19a
- Wetting agents, oil-soluble 10

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- Bags
  - multiwall paper 43a
  - Waterproof, paper lined 43b
- Controls, automatic switch equipped, catalog T24
- Filters, precoat, continuous vacuum, bulletin 218 32
- Laboratory equipment T35
- Oils, industrial, neatsfoot 49d
- Packaging equipment, Label posters T42
- Plant sites, available in Oklahoma B24
- Plant sites with accessible water supply, served by railway 9
- Waxes
  - Gersthofen B4
  - General line 1c

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Editorial Items

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2	9	19c	20-21b	22	26-27c	34c	B35b	B42	49a	50
3	10	19d	20-21c	T24	28	34d				

Expires October 14, 1951

BOOKLETS . . . . . .

Chemicals

Protective Coating Specialties

Reference chart listing descriptions, specifications, applications and other laboratory data for various types of driers, stabilizers, wood preservatives and emulsifiers. Advance Solvents & Chemical Corp.

Test Solution

Folder describing "Pneo-test solution" designed for locating leaks in vessels in which air pressure is applied and also for locating gas leaks; presented with usage instructions. J. C. Zobrist Co.

Elastomers and Plastomers

8-p. bulletin outlining the firm's service to clients in the polymer field such as their work in product evaluation, product development, trouble shooting, evaluation of new materials and analyses of elastomeric and plastic compounds. Foster D. Snell, Inc.

Wax

Technical bulletin detailing physical and chemical properties, formulas and formulations, of the firm's "Syrex 200" a wax prepared for use in polishes, protective coatings and other industrial formulations requiring a high melting-point wax component; compatibility data with natural and synthetic waxes are given along with solubility curves, using various commercial solvents. Velsicol Corp.

Soybean Lecithin

18-p. bulletin discussing the properties and suggested uses for "Arlecin," a soybean lecithin with excellent wetting and dispersing properties and also proved to be an effective emulsifying agent for oil-water systems. Six grades are described, varying in color and consistency designed for different industrial purposes. Archer-Daniels-Midland Co.

Rustbond Primer

Bulletin on rust primer with rust inhibitor that is designed to "wet" rust, reports results of tests as well as availability of compound and recommended useage. Carboline Co.

Equipment

Mud Filter

16-p. bulletin presenting details on mud filter used in cane sugar producing areas of the world, with up-to-date information on installations, users, construction and capacities. Oliver United Filters, Inc.

X-Ray Spectrometer

Data Sheet featuring X-Ray spectrometer with wide range Geiger-counter goniometer and electronic recorder, explains the theory of operation and shows analytical results obtained with it. Minneapolis-Honeywell Regulator Co.

Steam Traps

24-p. bulletin devoted to steam traps which operate in steam-heated equipment to discharge condensate and air but prevent steam from passing—for use in power plants, steam distribution systems, steam processes, and marine service. Recommendations concerning application, installation and operating principles are given in addition to information on construction details and price and size data. Yarnall-Waring Co.

Differential System

4-p. bulletin presenting the firm's constant differential system for use on oil combustion installations; system features controlled fuel return from the atomizer tip in order to provide a continuous wide capacity range without changing tips or cutting out atomizers and still maintaining the spray quality. Peabody Engineering Corp.

Conveyor Belts

40-p. manual on spiral woven wire conveyor belts and complete conveyor systems includes illustrated standard and special types of wire belting weaves with specifications and descriptions, plus power formulas and construction details. Korb-Pettit Wire Fabrics and Iron Works, Inc.

Process Machinery

8-p. bulletin covering the firm's line of attrition mills, pulp refiners, hammer mills, crushers, breakers, magnetic separators, specific gravity separators, etc.—with note also made of the available engineering service and laboratory facilities. The Bauer Bros. Co.

Catalytic Combustion

8-p. bulletin discussing principles of operation, catalyst element construction and several application methods of catalytic combustion, a low temperature oxidation process used in air pollution control and also for heat reclaiming purposes. Catalytic Combustion Corp.

Analog Computors

34-p. catalog and manual on high speed all-electronic analog computors for research and design gives detailed resume of origin, development, applications, component philosophy, operating procedures, oscilloscope presentation techniques, choice of scale factors, etc., of these instruments. George A. Philbrick Researches, Inc.

Dehumidification

4-p. bulletin dealing with the problems brought about by an atmosphere with too high a humidity, its cause, and what can be done to control it; machines for removing moisture from the air are presented along with a table of recommended humidities for various industries. Abbeon Supply Co.

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ARMOUR *Chemical Division*

Fatty Acids
Long-Chain Fatty Acid Derivatives
Industrial Oils

Arneel Plasticizers Available for Prompt Shipment

Defense requirements have created shortages of many primary plasticizers. Fortunately, however, with the expanded facilities of their new plant, the Armour Chemical Division can offer Arneel Plasticizer for prompt shipment.

"Arneel" is the Armour trade-name for a series of 11 high molecular weight aliphatic nitriles having alkyl chain lengths of 8 to 18 carbon atoms. They are chemically stable nitrogen containing compounds represented by the general formula RCN where R is a normal aliphatic group.

Arneel Plasticizer is being used as an extender and in many cases as a primary plasticizer particularly where low temperature flexibility is desired. The Arneels are excellent softening agents for several synthetic rubbers and elastoprenes and synthetic rubber-like elastics or elastoplastics. Arneels are particularly efficient softeners for acrylonitrile copolymers, polyvinyl and polystyrene derivatives. For certain polymers, 25 to 50 per cent less plasticizer is required to obtain the desired characteristics. Furthermore, the efficiency experienced with Arneel softeners permits compounders to carry a high load of carbon black or other reinforcing agent and thus reduce materially the cost of the finished product.

The Arneels offered commercially as plasticizers are readily available and can be obtained in tank car quantities. For additional information, write for your free copy of the booklet "The Arneels as Plasticizers."

New Oleic Acids Improve Products

Low Temperature Solvent Crystallized Oleic Acids, introduced recently by the Armour Chemical Division, are already finding important applications because of their unique combination of properties. Not only does this process—exclusive with Armour—produce the highest quality and most uniform Red Oils and Oleic Acids available, but it uncovers many advantages not found in ordinary distilled or pressed products. It has lower saturated acid content, greater stability, and is ester-free and almost odorless.

In the manufacture of latex foam rubber, for instance, potassium oleate is used as a foam stabilizer. Here good odor is important in the soap product so that no clinging rancidity is present in the final product. Likewise, low unsaponifiable content is important if a uniform "blow" is to be obtained. Good mechanical and uniform chemical stability are also highly desirable if uniform jellation is to be controlled. All of these properties are inherent in Armour's Low Temperature Solvent Crystallized products.

Recently, many foundries have turned to resin binders as a means of producing uniform sand cores. Here low-titer red oil dissolved in fuel oil or kerosene acts as a positive mold release from core boxes. Thus the time cycle of "loading" is reduced and rejections are consequently negligible. And, at the same time, mold build-up is greatly lessened.

The above are only two examples of where the superior qualities of Low Temperature Solvent Crystallized Oleic Acids have improved formulations. If you are dissatisfied with the products you are now using, or if you are looking for a safe and dependable source of supply for oils and fatty acids, it will pay you to investigate Armour's complete line of Oleic Acids and Red Oils. Specifications are listed in the chart below.

Product	*Titer* Min.	Max.	*Iodine No. (Wijs)* Min.	Max.	*Acid Value* Min.	Max.	*Sap. Value* Min.	Max.	*Unsaponifiable* Min.	Max.	*Color* Max.
Distilled Red Oil (8°-11° Titer)	8°C	11°C	90	95	193	200	193	200		3%	6.4R-24Y (1" Lov.)
White Oleic Acid (8°-11° Titer)	8°C	11°C	90	95	195	201	195	201		2%	1.5R-15Y (5¼" Lov.)
Distilled Red Oil (Low Titer)	—	5°C	90	95	193	200	193	200		3%	6.4R-24Y (1" Lov.)
White Oleic Acid (Low Titer)	—	5°C	90	95	195	201	195	201		2%	1.5R-15Y (5¼" Lov.)

All of these products are available for prompt shipment in 55-gallon drums or in aluminum tank cars. Write today for prices, samples and additional information.

Commercial Grades of Neatsfoot Oil Available for Prompt Shipment

In the processing of textiles and leather, neatsfoot oil plays an important role. It imparts a quality that no substitute cheaper oils can offer. For these industries, Armour Chemical Division produces several grades of neatsfoot oils—with the same degree of uniformity as lard oils. Here are the specifications of three of these oils:

Prime Neatsfoot Oil

F.F.A.	5% Max.
Pour Point	40-45°F
Color	3 NPA Max.

Ideal for use in knitting mills, this oil washes out readily and imparts a fine quality to the finished product.

Extra Neatsfoot Oil

F.F.A.	10% Max.
Pour Point	40-45°F
Color	4½ NPA Max.

No. 1 Neatsfoot Oil

F.F.A.	15% Max.
Pour Point	45-50°F
Color	5 NPA Max.

Both of the above oils are widely used as leather preservatives and softeners—also for tough textile work.

Recommended Reading

Write for the authoritative booklet "The Handling, Sampling and Testing of Fatty Acids" covering: Shipping and storing fatty acids; process equipment; standard sampling methods and equipment; testing fatty acids; tests commonly used and their meanings. Available without charge.

Mail this Coupon

Please send additional information on

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ARMOUR *Chemical Division*
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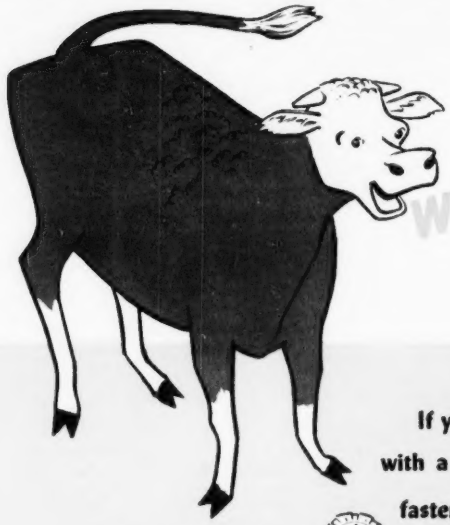
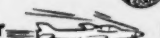


WELL, TAN MY HIDE!

(It'll be smoother and softer with Heyden **SODIUM FORMATE**)

If you're looking for smoother  leathers with a "rounder"  and "fuller" feel . . . if you want faster  more complete penetration and all-around better  tannage . . . . . investigate the advantages of using Heyden SODIUM FORMATE in your chrome tanning. Its use is constantly increasing because it cuts  processing time  and costs  decreases acid harshness of the bath  and produces leathers of high uniformity  and quality 

The advantages of Heyden Sodium Formate . . . . . neutral white crystalline powder  superior quality, exceptionally high purity, resistance to caking . . . . are also valuable in its use in the dyeing industry  in production of water-resistant wallpapers  and as a chemical intermediate 

SODIUM FORMATE

Heyden Sodium Formate is shipped in 300 lb. fiber drums.

●

Samples and further information forwarded upon request.

FORMIC ACID (90% and 85%)

Important to the metal plating, rubber, dye, paper, leather, textile, drug and perfume industries—is shipped in 125 lb. carboys and 500 lb. stainless steel drums.

HEYDEN CHEMICAL CORPORATION

393 Seventh Avenue, New York 1, N. Y.

CHICAGO • PHILADELPHIA • SAN FRANCISCO • DETROIT • PROVIDENCE

FINE HEYDEN CHEMICALS

BENZALDEHYDE • BENZOATES • BENZYL CHLORIDE • BROMIDES
CHLORINATED AROMATICS • CREOSOTES • FORMALDEHYDE
FORMIC ACID • GLYCEROPHOSPHATES • GUAIACOLS
HEXAMETHYLENETETRAMINE • MEDICINAL COLLOIDS • METHYLENE
DISALICYLIC ACID • PARAFORMALDEHYDE • PARAHYDROXYBENZOATES
PENICILLIN • PENTAERYTHRITOLS • PROPYL GALLATE • RESORCINOL
SALICYLATES • SALICYLIC ACID • STREPTOMYCIN

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